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TALL SHIPS PACIFIC

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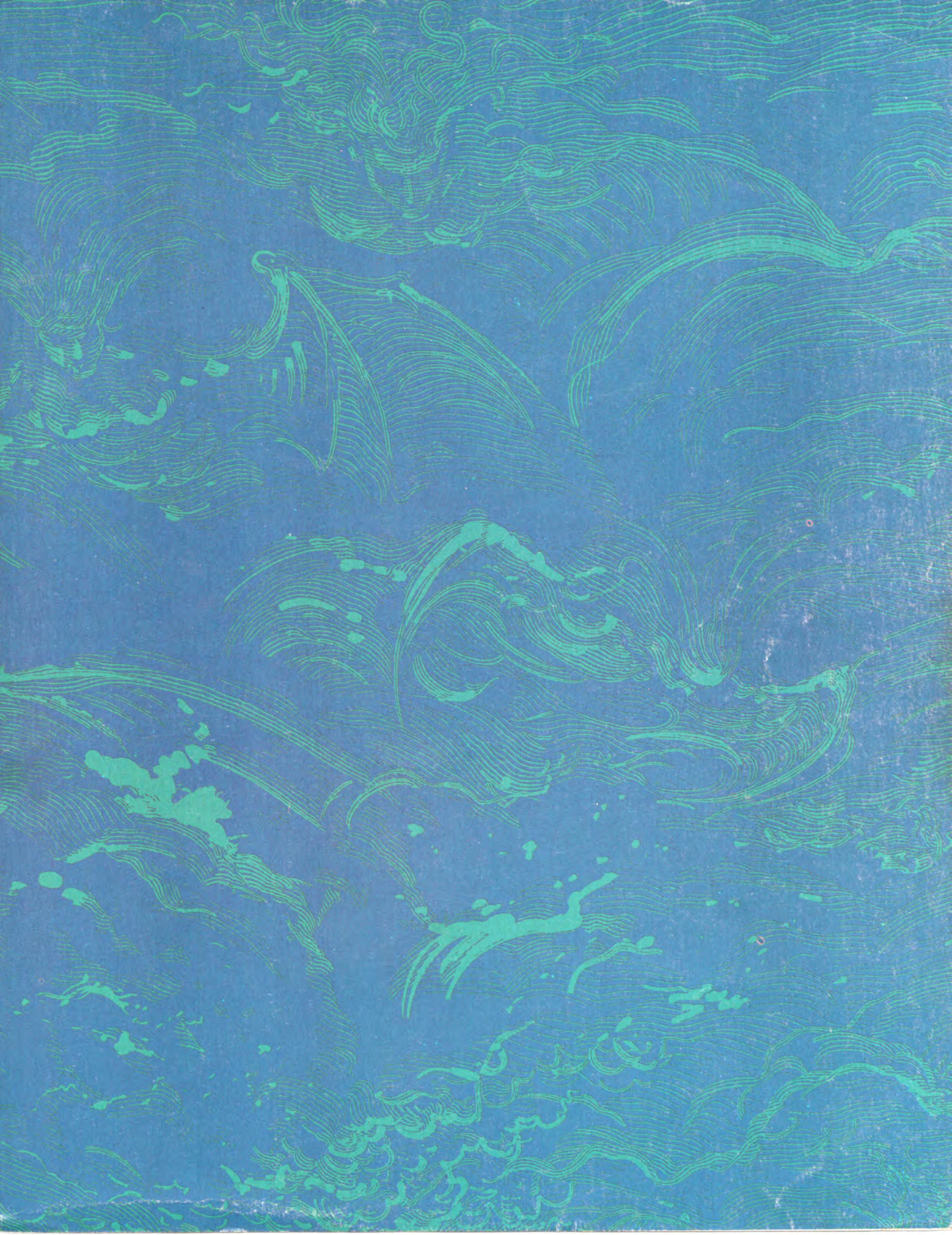

TALL SHIPS PACIFIC

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TALL SHIPS PACIFIC

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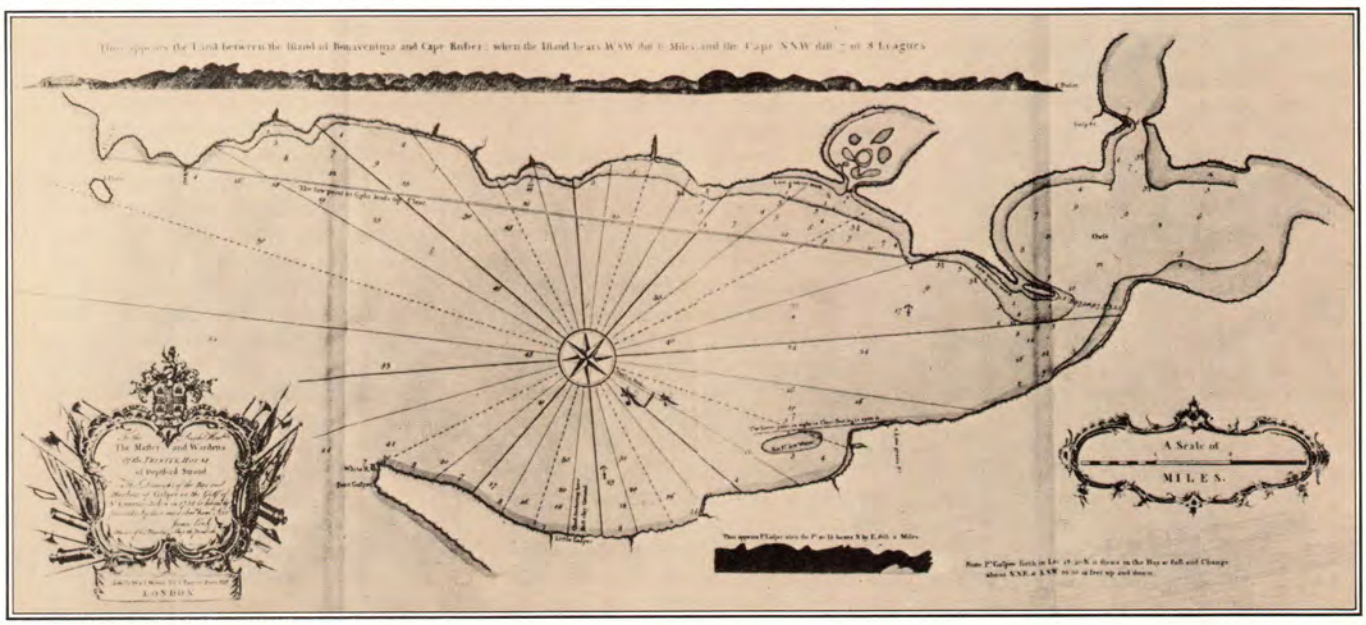
CAPTAIN COOK

–A MODEST, METHODICAL, REMARKABLE MAN

BY DONALD B. SHARP



At left, Cook as painted by Nathaniel Dance. Above, his chart of "the bay and harbour of Gaspee, 1758."

On the afternoon of August 28, 1768, the usual *ad hoc* committee of waterfront merchants, clerks grateful for a respite from quill and inkhorn, idlers, gossips, pickpockets, beggars, port bureaucrats, young gallants, flirtatious girls, obstreperous children and stray dogs gathered on Plymouth's waterfront to watch a clumsy-looking former coal carrier, grandly renamed *H.M.S. Endeavour* gather her anchor and chain aboard and unfurl her topsails to depart.

Old salts pointed knowingly at the gunports cut into her planking, for they understood she was bound for the wild, unknown lands at the other side of the world. They must have marveled that the 94 men aboard her found room to stand on her 106-foot length along with the deck cargo and livestock, which included a goat that had already been around the world aboard *H.M.S. Dolphin*, Captain Samuel Wallis, lately returned from the discovery of Tahiti.

Hats and scarves waved from ashore as a light breeze filled *Endeavour*'s topsails and the ship rode the ebbing tide. Caps and shirts answered from the vessel. And among the crowd perhaps a young woman—a simple sailor's wife—suppressed a tear and hoisted a plump baby high, urging it, as mothers do, to wave "Bye, bye." And no doubt from the rigging of the departing ship an able seaman peered intently ashore, holding her in his gaze until the image was lost among the crowd. A generation later, if this baby found itself among the forecastle gang of a sailing ship, and if a messmate, with the rude jocularity of men who work together, had challenged his competence and demanded to know why he thought himself fit to sail before the mast, perhaps this plump baby, now grown to callow manhood, answered by saying: "My father sailed with Cook." His answer would win him no favors, as no other would in those days of hard work and a peculiar workingman's glory before the mast, but it would give him good credentials. A man with only a tenuous connection to Captain James Cook, R.N., was worth a second look.

Fourteen summers before *Endeavour's* departure, James Cook had been offered command of the bark *Friendship* , a fat coal carrier trading down the North Sea coast between Whitby and London. He told his employer then that he was grateful for the opportunity but that he had determined to join the Navy. His employer told him he was crazy. In nine years he had come up fast in the demanding apprenticeship of the North Sea coasting trade and had

learned to work a small ship with small crew through the hazards of a stormy coast studded with sandbanks. James Cook had made a reputation in Whitby and his prospects as a big fish in a small pond were excellent. In the Royal Navy, then a service in which family connections counted for more than achievement, a Norfolk farmhand's son might languish for decades as Master's Mate and eventually Master, a peculiar rank for professional mariners in Naval service which combined great responsibility with little distinction. He would likely end his days with a pension and an old Navy man's memories of hard times in dockside offices as well as at sea.

But James Cook had hopes, and in June, 1755, with yet another naval war with France in prospect, he joined up. He rose as fast in His Majesty's service as he had in the service of the Walker brothers at Whitby, and he became Master of the 64-gun ship *Pembroke* on his 29th birthday—October 27, 1757. His abilities began to be recognized in his *Pembroke* service and in our French and Indian war. He led the crew that sounded and buoyed the channel that brought ships up the treacherous St. Lawrence to serve Wolfe's invasion of Quebec. He made charts from his surveys and soundings, and his later chart of the St. Lawrence was good enough to serve mariners for more than a century. He surveyed the icy coast of Newfoundland at war's end and he became the protegé of Sir Hugh Palliser, governor of Newfoundland. He was known as the best pilot in the Royal Navy after four years of survey and navigation work, and he was described by Lord Colville as a seaman of "genius and capacity." He was hard-working, meticulous, enterprising, a man to be trusted with lives and ships on wild, unsurveyed coasts. He was the right man in the right place at the right time, and on August 28, 1768, as ship's Master of the little *Endeavour*, he was on the threshold of greatness.

James Cook became England's Columbus and the Pacific's Columbus, a man who sailed into the unknown with a professionalism as worthy to be admired as we admire the courage and competence of astronauts in this very different age. He was all the more to be admired for what he achieved with the primitive tools and ships of his time, and perhaps most to be admired for his devotion to a mission that was as cultural as it was technical, for his sensitivity to people as well as ships and gear. He was a great man for his consciousness of himself as an invader of other people's territory as much as for his awareness of his mission.

England's motives for Cook's mission can be summed up by the single word "trade," an activity as old as the Cornish tin mines that supplied the Roman Empire. Trade among European nations was the one constant during centuries of religious and political turmoil. The Crusades had taught Europeans about spices, products so valued that kings reckoned their wealth in peppercorns, and when Islamic legions under Suleiman I blocked the overland trade routes through Asia Minor, the merchants of Spain, Portugal, Holland and England lost no time in outfitting ships to carry on the spice trade by water. The Portuguese swallowed Macao, Formosa, and Goa while the Dutch took Indonesia. Spain got the Philippines and much of the Americas while the French grabbed parts of Africa and some of North America, too. England sampled India and both Americas and, like the rest, wanted more. She wanted to keep others out of what she had, and wanted the odds in her favor if she went after something somebody else had. Discovery was the prelude to the simple looting of what could be found, and if the heathen residents were gullible enough to exchange their wealth for cheap cloth and ironmongery, plus whole libraries of pious tracts, then so much the better.

Discovery and trade, though, meant navigation—efficient, reliable navigation —and that meant competent charts to show where things were and where they were not. It also meant a competent astronomy to locate things relative to Europe and to one another by reference to the sun, moon, and stars. National pride was involved, of course, as was what might be called the "questing spirit"of European man, but at bottom it was money that made the ships go on as the world went 'round and 'round under their keels.

The amount of money involved and the enthusiasm surrounding the spending of it in pursuit of trading opportunities is almost incomprehensible in an age of government-regulated financial caution. When else in history did a private company agree to assume responsibility for a national debt of £31,000,000, and pay the government £7,500,000 for the dubious privilege of assuming that debt, all in anticipation of a sufficiently profitable trading monoply in a part of the world that wasn't even mapped and explored. This is what England's South Sea Company did, and public fervor bid South Sea shares up from £128 to £1050 in the first six months of 1720. To be sure, when the "bubble" burst, shares fell to £150, the government was sacked, and Robert Walpole was brought forth to save both England and the Pound Sterling by financial arrangements almost as chicane as those practiced by the late directors of the South Sea Company. But the fervor went on, although it took more sensible forms.

Discovery and navigation depended on fixing longitude, and that depended on accurately measuring the rate of the apparent motion of the sun across the sky, and that depended on an accurate chronometer. In 1714, the Lords of the Admiralty created an official Board of Longitude to work on the problem and this Board promptly offered a prize of £20,000 to be awarded to the first person to devise a means of establishing longitude at sea within 30 miles, a challenge English watchmaker John Harrison met in 1735 by devising a chronometer accurate to within one minute per month. In 1745, the good Lords announced another prize of £20,000 for the first ship to discover a Northwest Passage over the top of Canada as a shorter route to Asia. Consider these prizes in view of the fact that an English laborer of 1760 earned about 11 shillings, 6 pence per week —barely £30 per year.

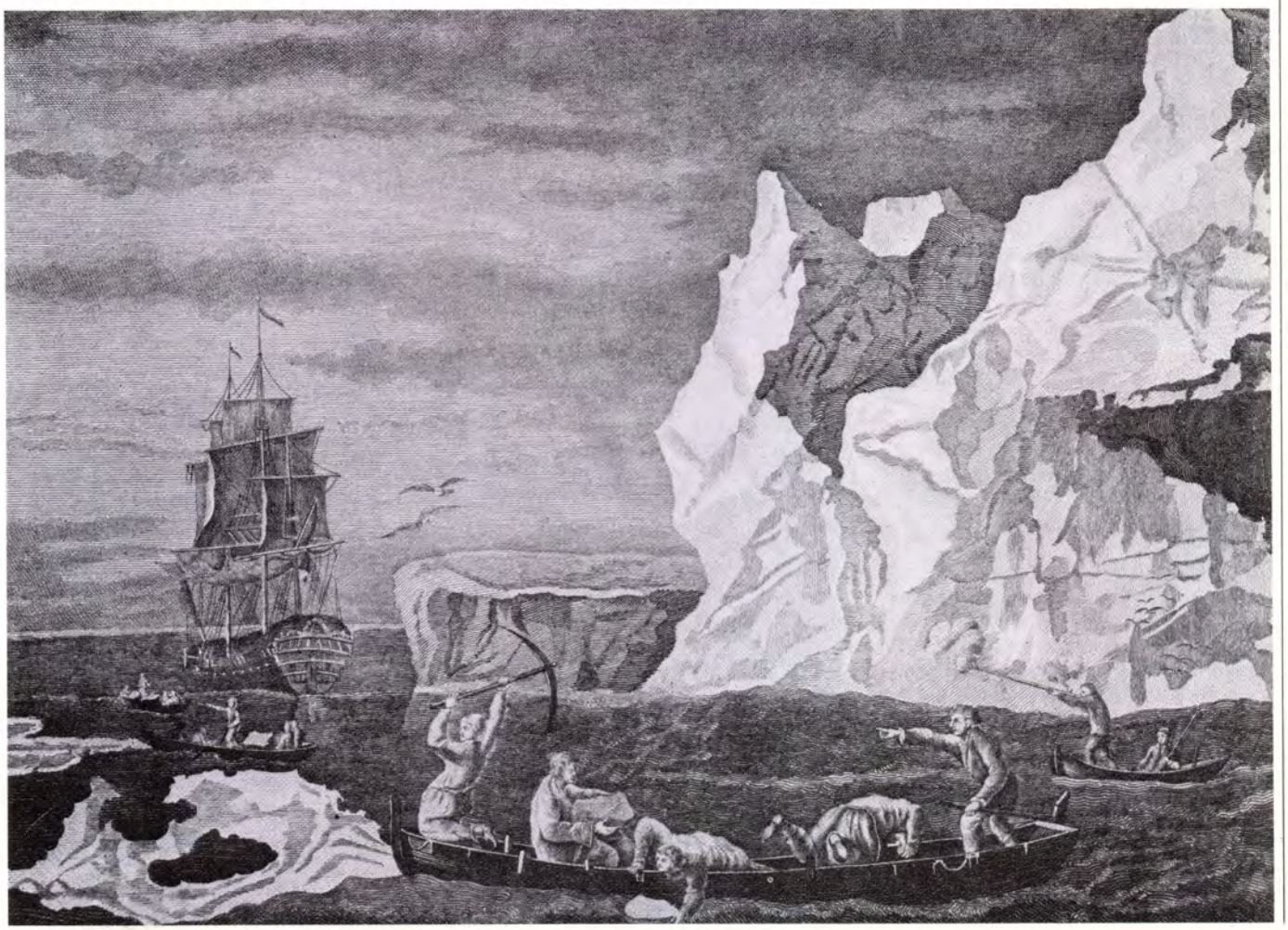
He was known as the best pilot in the Royal Navy after four years of survey and navigation work, and he was described as a seaman of "genius and capacity."

These prizes, fabulous in their day, show what value the governing mercantile class (who could afford to be generous with public money) put on efficient navigation and the discovery of parts of the world that were unknown to Europe nearly 300 years after Columbus.

The whole business of Pacific enterprise was complicated by uncertain reports of a "great southland," the Terra Australis Incognito that had appeared in one form or another on nearly every world map since 1500, and which was hinted at by numerous unrelated sightings of islands, headlands and icebergs. As late as the American Revolution, that great sweep of the world between the Argentinian coast of South America and all the way around to the Chilean coast was nearly a blank. The "great southland," if it existed, would richly reward discovery: first, it could be both a market and a source of goods; second, it could provide harbors and repair yards for the fat ships that would bring mercantile civilization to the Pacific; third, it could provide bases from which an opportunistic Navy could prey on the commerce of competing nations. Clearly, whoever found it first would enjoy great advantages. England, proud after dispossessing the French of Canada, and ashamed after doing so poorly against Spain in the War of Jenkin's Ear, wanted to be first. Accordingly, some discreet officers of the Royal Navy planned a voyage to find the "great southland" before someone else did. For a cover story, they announced a legitimate intention to observe the transit of Venus across the sun in 1769. Thus decided, they sought a skipper and a ship.

The skipper—the pliable, reliable Cook—was fairly easy to find, partly because the Royal Navy had so few officers worthy of the name, the active list being burdened with dilletantes whose rank depended on family connections. These privileged men didn't want the job anyway, for it would take

Below, *Resolution* amongst the icebergs of Antarctica during the second voyage.



To keep sea-room outside of the Reef meant losing sight of the coast; to stay inside meant a minute-by-minute watch for coral heads that can sink a ship.

them away from the fleshpots of London and expose them to hard work, poor rations, and perhaps even some risk. By contrast, the Royal Navy also had a small cadre of competent seamen, men who had professionalized the service under the aegis of Lord George Anson, quondam First Lord of the Admiralty. As a flag captain, Anson had commanded *H.M.S. Centurion*, 60 guns, in the pathetic War of Jenkin's Ear and had been appalled at the way his ships were supplied and manned. Once elevated to authority, he began to remake the Royal Navy. Prior to Anson, the so-called "great" English sea captains were largely privateers and borderline pirates who were awarded a uniform in exchange for foreign booty. After Anson, England's great captains were professional Navy men. When the Royal Navy wanted a skipper to seek out the "great southland," they chose one of these, one Master James Cook, R.N.

Cook had every desirable qualification. At forty, he was mature, yet still in good health despite several years aboard His Majesty's ships on His Majesty's poor rations. He knew how to handle ships in strange waters and on rocky coasts. He ran tight ships, but clean and healthy ships in which crews stood a 50/50 chance of surviving the voyage. He was as good a mapmaker as England had, and a competent draftsman at recording topographical features. He knew celestial navigation and had proved himself a capable observer of astronomical phenomena. He was accustomed to long tours of duty; he was a meticulous planner and manager of details; and he was psychologically self-sufficient. Last, when invited, he was eager to go, even without the deserved promotion to Captain. The Admiralty saw fit to promote him to Lieutenant just three months before *Endeavour* departed.

Cook must have known he was being considered long before the announcement. Indeed, he must have been deeply involved in the planning, for the ship chosen was one that only he would have thought of—a Whitby collier. The coal ships of Cook's apprenticeship could carry a tremendous cargo for their size, could be handled by a small crew,

THE PACIFIC VOYAGES OF CAPTAIN COOK

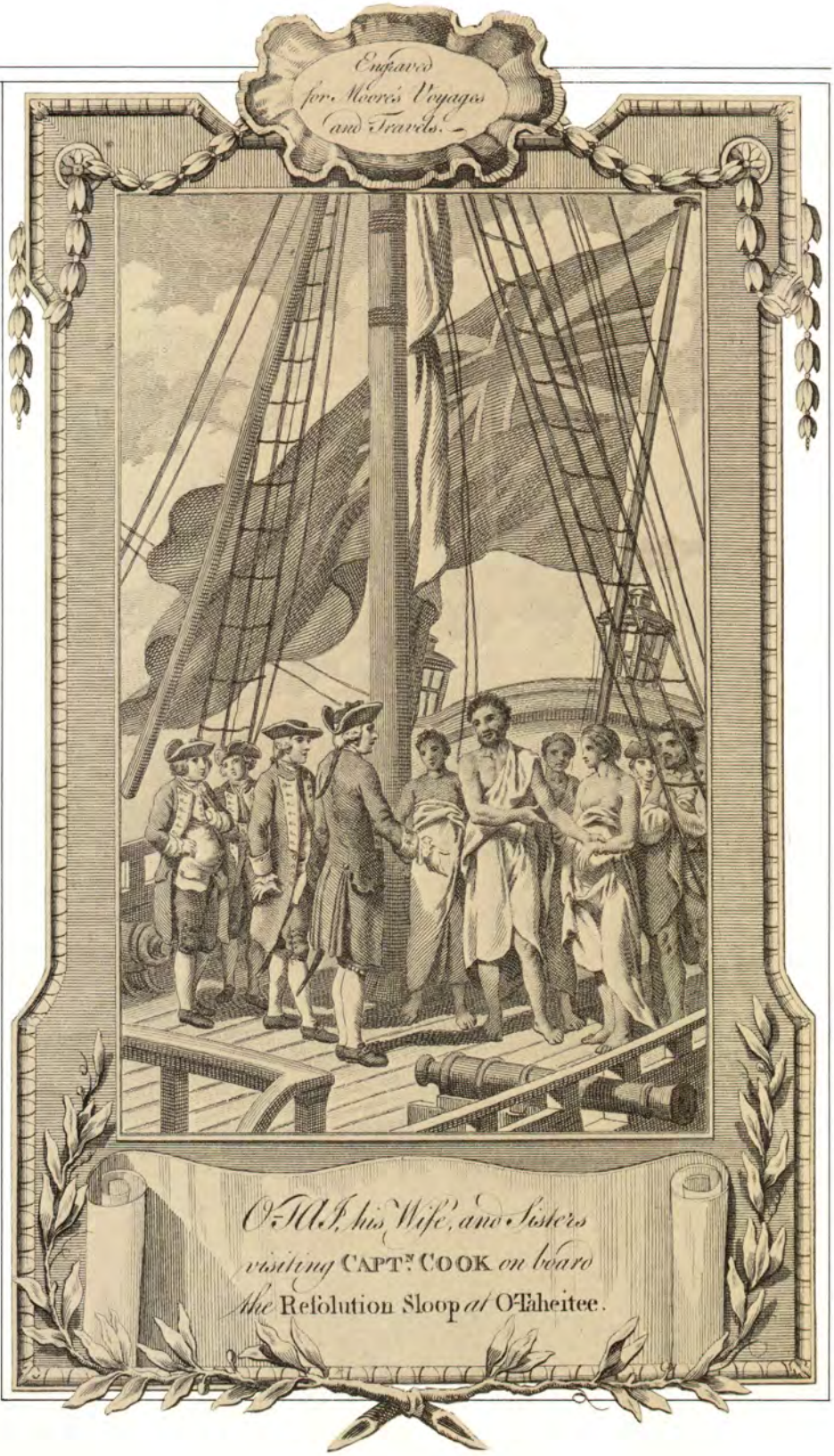
were shoal-draft enough for coastal exploration and flat-bottomed enough to ground on anything but rock without injury. Accordingly, the Royal Navy bought the *Earl of Pembroke*, a three-year-old Whitby collier, 368 tons, 106 feet overall, slightly over 29 feet in the beam, and over 11 feet in the hold. The Royal Navy paid £2840 105s. lld.—about one-eight the prize offered for finding the Northwest Passage or for building a workable chronometer. She was given an overhaul and a bark rig, including spritsails, and re-named *H.M.S. Endeavour*. Cook took command of her on May 25, 1768, at Deptford, worked her down to Plymouth, and departed for Tahiti to watch Venus cross the sun.

The rest is indeed history. Cook made an uneventful passage to Cape Horn, found good weather and a rare easterly wind in that region of storms from the west, and got around with studdingsails set. He was just about the only one who ever did it that easily, from that day to this. He proceeded to Tahiti, not losing a man to that old nautical nemesis, the scurvy, due to his regimen of hygiene and a diet that included assorted experimental anti-scorbutics, plus fresh meat and vegetables taken aboard at every opportunity for a venture ashore. Once at Tahiti, Cook dealt respectfully with the natives. His crew, however, despite his preachments, apparently exercised themselves in a manner to provoke the tales, told ever since, of complaisant Polynesian women. And the Tahitians, with childlike curiosity and a sense of private property based on Nature's bounty, stole everything in sight. Eventually, on June 3, 1769, Venus came around as the astronomer Edmund Halley had said it would and Cook's party duly observed and recorded it.

This transit of Venus business, so casually glossed over in most accounts of Cook's voyages, deserves explaining. It was part of a scientific effort to establish the distances between and the orbits of the planets of the solar system, plus their relative size. When Mercury or Venus pases between the earth and the sun, the event is called a transit, and the

planet in transit is visible (through smoked glass) as a dark spot that crosses the face of the sun. Suppose an observer in the northern hemisphere stands at point A and watches the transit while another observer watches from point B in the southern hemisphere. The observers thus stand at the ends of a line, AB, that is the base of a triangle that has Venus at its apex. As the observers watch, each sees Venus make a chord across the sun, but the chord each observer sees will cross the sun at different positions, say A′ and B′. A′B′ also form the base of a triangle with Venus at the apex. By assorted arcane mathematical manipulations, the known length of AB and the known angles that A and B form with the equator of the Earth will establish the distance to Venus, and once that distance is known, the size of the sun can be determined by further mathematical operations on the triangle based on A′B′.

The task has its problems: the instant that Venus contacts the outer perimeter of the circle formed by the sun (first external contact) and the instant that Venus is precisely in contact with the inside of the perimeter (first internal contact) must be accurately noted, as must the times when Venus is in internal and external contact as it leaves the face of the sun. Establishing these times is made difficult by the "black spot" effect whereby two objects brought close seem, visually, to touch before they are actually in contact. With Venus, the difficulty is heightened by the planet's dense, gaseous atmosphere. Charles Green, the official astronomer in the party, did his best and recorded "first external contact" at 9 hours, 25 minutes, and 4 seconds past midnight on June 3, 1769, and "second external contact" at 3 hours, 33 minutes, and 10 seconds past noon. On the basis of these observations and those made elsewhere, the astronomer Encke determined that an angle of 8".57 formed by two equatorial radii from the earth would exactly include the sun. From that angle, or parallax of the sun, additional astronomical data could be derived, much of it relevant to navigation. Despite the crudity of the instruments, the


Engraved for Moore's Voyages and Travels.
O-Too, his Wife, and Sisters visiting CAPTN COOK on board the Resolution Sloop at O-Taheitee.

Perhaps his failure to find a "great southland" disappointed his superiors. No matter. He could go look again, they said, and they began preparations.

parallax Encke computed from the 1769 observations proved to be off by only 2.5%, the currently-accepted figure being 8".8.

Two parties had left *Endeavour* to set up observation stations, one on a point Cook named Point Venus. Ever the conscientious officer, Cook did not observe the birthday of King George III on the following day, but waited until the absent scientists returned, and celebrated the event on June 5. Several Tahitian chiefs joined in the toasts to this "Kihiaro," the closest they could get to pronouncing "King George."

After some mapping of Tahiti, some more trouble with thieving, and the recapture of two marines who sought to remain with the wahines they had befriended, Cook was ready to read the sealed orders that were to be opened as soon as the observations were complete. The orders were fairly simple. He was to head south to 40° south latitude. If he found a "southland," he was to survey its coast. If no southland appeared, he was to proceed west to New Zealand and establish whether it was an island or simply a product of Abel Janszoon Tasman's geriatic imagination or his seventeenth-century navigation. Cook took along a Tahitian named Tupia, who told him where Huahine and Bora Bora were, so Cook stopped at Huahine, visited awhile, rejected the invitation to join forces with the local chief in a campaign against the people of Bora Bora, took time to visit this "Bola Bola," plus a few other islands, noted the similarities of the inhabitants, and named the whole collection the Society Islands before proceeding south as far as 40°20' (just to be sure) then turning west again for New Zealand. He found New Zealand approximately where the Dutchman Tasman had said it was. Here, despite the kinship of Tupia's language with theirs, the Maoris proved a belligerent lot, and Cook eventually had to order his marines to fire upon them to preserve the ship. He sailed a figure-8 around New Zealand's two islands—an astonishing feat of piloting on strange coasts beset by strong winds and currents. He left his name on the strait that separates them, and once again

Above, a more stolid Cook was painted at the Cape of Good Hope by Webber, the ship's artist.

shaped a course to the west. He met the Australian coast at Botany Bay (he called it "Stingray Bay"), narrowly missing Bass Strait between Tasmania and Australia, and sailed northward up the coast.

The Australian coast and its barrier reef presented a troublesome choice. The Great Barrier Reef trends away from the Coast. To keep sea-room outside the Reef means losing sight of the coast: to stay inside the Reef means a minute-by-minute watch for coral heads that can sink a ship. Cook went inside and, after dodging coral heads for 1,000 miles, his *Endeavour* struck one. The incident became the stuff of drama: men pumping furiously, others jettisoning every extraneous piece of weight including cannons and ballast; yet others getting the tophamper off the ship, and still others carrying kedge anchors out in the boats to pull her off, the tide ebbing to counteract their efforts to float her; still other men stuffing up the leak, and, at last, a returning tide full enough to float her off, this followed by getting her to the beach and careening her to repair the damage. For awhile, Cook must have had his hands full, and certainly at this moment his constant care for the maintenance of gear and the health of his crew saved the ship. Worn gear, ill-used tackle, or a crew reduced or weakened by scurvy could never have surrived.

With *Endeavour* seaworthy again, Cook worked his way through the reef and further narrow escapes, pausing off Cape York on the newly-named Possession Island to claim Australia for his Brittanic Majesty, proceeding onward toward New Guinea, *Endeavour* being struck by a lightning bolt that shivered the sentry's ramrod but injured no one, on northward via Torres Strait, proving it was there, arriving at Batavia (Java) in early October, 1770. While the ship got an overhaul, he sent his reports to the Lords of the Admiralty. Other than the transit of Venus, he felt he had little to report. He had found no "southland" (although he had, without knowing its size, coasted the eastern edge of the new continent Australia). Every land he touched upon had been seen by Europeans who had been there earlier. He was, perhaps, most pleased to report that not one man had been lost to scurvy during the cruise—an ironic fact, for several died in Batavia of the local dysentery and others were so weakened that they died on the way home. Homeward bound in the Atlantic, they began to encounter ships again—colonial whalers and English merchantmen—and they learned that they were reported lost. They proceeded to England to refute the report, coming to anchor on July 13, 1771. The goat had survived the trip and was immortalized in a shabby Latin epigram by Dr. Johnson. Cook was promoted to the rank of Commander, a compromise of the captaincy he deserved. Perhaps his failure to find a "great southland" disappointed his superiors. No matter. He could go look again, they said, and they began preparations almost at once.

This time he would go with one avowed purpose: to circumnavigate the world at the highest (farthest down) southern latitude possible. He would sail through the area where the "great southland" was supposed to be. He would also go with two ships, his own *Resolution,* a shiprigged warship, and *Adventure,* a smaller version of *Resolution* commanded by Tobias Furneaux. This time, each ship would carry two

Seen in the proper perspective of its day, the voyage was an unprecedented exercise in seamanship, discipline, administration and scientific observation.

chronometers made to the specifications of Harrison's fourth, 1759, instrument. The two ships departed Plymouth on July 13, 1772. They spent some time at Cape Town, then audaciously struck southward. By Christmastime, they were among the icebergs and they shifted course to the west. In mid-January of 1773, they crossed the Antarctic circle. When they became separated, *Adventure* headed for the prearranged rendezvous in New Zealand, stopping briefly to survey the coast of Tasmania. The two ships met again at Queen Charlotte Sound. Furneaux had not maintained Cook's dietary discipline and several of his crew were down with scurvy. Cook straightened that out and led the party eastward toward Cape Horn as far as 13° west longitude, turned north to Tahiti, rested and visited awhile

Above, Cook's Tahitian passenger, Omai. Below, *Resolution* and *Discovery* in the Hawaiian Islands.

in the islands, picked up a Polynesian tourist named Omai, proceeded to Tonga, named them the "Friendly Islands," and turned again to New Zealand. Once again *Resolution* lost sight of *Adventure*. Cook left a message in a bottle under a tree and turned south again.

By January, 1774, *Resolution* was past the Antarctic Circle again. Weather and ice eventually forced a retreat, which disappointed Cook, for though he was satisfied to have circumnavigated the world at Antarctic latitudes, he was painfully conscious of how much land might be missed by a little ship in a large ocean. The retreat took *Resolution* to Easter Island, back to Tahiti, on to New Zealand in search of *Adventure,* taking time to find the New Hebrides and New Caledonia on the way, and on to

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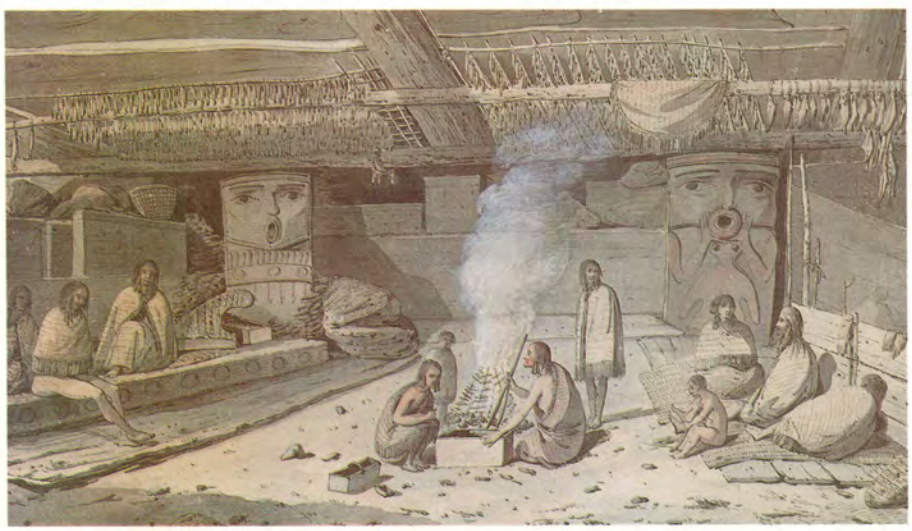
England via Cape Horn and Cape Town, since the Maoris had told him that *Adventure* had long departed Queen Charlotte Sound. *Resolution* passed Plymouth on July 29, 1775 and anchored at Portsmouth the following day. The voyage had taken three years and eighteen days, and it had covered astonishing distances in the stormy Southern Ocean. The positions marked were probably the most exact to date, due to the accuracy of the Harrison chronometers. Though four men had been lost, none had been lost to scurvy, despite two Christmases in the Antarctic Ocean and one at Tierra del Fuego. Seen in the proper perspective of its day, the voyage was an unprecedented exercise in seamanship, discipline, administration, and scientific observation—not to mention consistent, cool-headed fortitude. No one afterwards demonstrated such ability in the execution of such a mission, though, to be sure, Cook's activities were rapidly reducing the need for such pursuits.

Cook had the satisfaction of having gone farthest south on a voyage that would be daring even today, and he could well have retired to a quiet sinecure ashore. Yet, for an old sailor, the land always remains alien—a place where he doesn't fit. In less than a year, while at a dinner with John Montagu, fourth Earl of Sandwich and First Lord of the Admiralty, Cook found himself volunteering to go look for that geographical will-o-the wisp of the opposite hemisphere, the Northwest Passage. By July of 1776, he was underway again with *Resolution* as his flagship, and accompanied by *Discovery* under Charles Clerke. This time he was a full Captain.

This time he should have stayed home. The American Revolution was under way, a transaction that brought out more war profiteers than soldiers. *Resolution* and *Discovery* were supposedly refitted, but the job was done with shoddy workmanship and worse materials. Throughout the voyage, both vessels were plagued with failures of masts, rigging, and caulking. The town of Plymouth bade him farewell a third time on July 12, 1776. This time Cook didn't return.

The two vessels made an easy passage to Good Hope and on to Kerguelen Island, stopped on Tasmania's southern coast to repair the chronically-suffering spars and rigging, and sailed on to New Zealand and Tahiti via Tonga. Cook's Tahitian passenger Omai, a most cosmopolitan fellow by now, returned home with assorted English haberdashery, a horse, and a brace of pistols. From Tahiti,

Below Webber's representation of Nootka Sound Indians; at right, the Northwest coast.



The people accepted him with more reverence than he had any right to expect, a reverence he was more inclined to make use of than inquire into.

Cook bore north and in January, 1778, came upon a group of islands where the people, obviously Polynesians, accepted him with more reverence than he had any reason to expect, a reverence he was more inclined to make use of than to inquire into, an oversight that was to prove fatal. He had seen many strange peoples by now and perhaps familiarity had dulled his vigilance.

From the Sandwich Islands, as Cook named them, and which later generations would call Hawaii, he proceeded to the coast of North America, up to present-day Vancouver Island and Nootka Sound. There, from the stands of fir and spruce, he repaired the defective spars. The crew vastly enjoyed this stay, since the Indians happily pandered their women, and a pewter plate bought a consort for the night. The ships were all but stripped of dinnerware in a short while, despite a large supply of such stuff for trading purposes (to be sure, the suppliers of the ware had envisioned exchanges of a more tangible result), and David Samwell, surgeon aboard *Discovery,* ruefully noted that "... many of us after leaving this Harbour not being able to muster a plate to eat our Salt Beef from."

The ships somewhat better off and the Arctic somewhat thawed by then, Cook sailed north through the Inside Passage to Alaska, westward to the smoking, volcanic Aleutians, north through Bering Strait, and over to Siberia for a quick look. Continual ice packs stopped him at 70°44′ north. The rigging of the ships needed an overhaul again, but for reasons perhaps related to his age—Cook was fifty that fall—he chose to winter in Hawaii rather than Nootka Sound, where suitable timber for repairs was plentiful. His orders declared that he was to avoid giving offense to the Spanish claim to North America, too, so he can hardly be faulted for ordering a course for the tropics.

In Hawaii, the ships anchored in the marginal roadstead off Kealakekua Bay. Once again, Cook was welcomed with reverence and heavy tribute of yams and pigs. He did not know that the priests and chieftain class had billed him as the demi-god Lono, or Rono, returned according to an ancient legend, and he could not know how resentful and burdened the people felt at the tremendous increase in their tithes. And the Hawiians could not be blamed if they sought to steal everything portable or floatable, for that was a cultural indulgence. Cook could not be blamed for punishing theft, for he had to keep the ships and gear intact if he and his party were to get home again.

The friction between Caucasian and Polynesian, between Englishmen from a society growing quickly industrial and Hawaiians who made saws of sharks' teeth, generated heat that burst into flame on February 14, 1779. Some Hawaiians stole *Discovery's* cutter. Cook went ashore with a group of marines and, despite a hostile crowd, sought to persuade the local chieftain to come aboard *Resolution* as a security for the cutter, a common enough gambit in Cook's Polynesian experience. The chieftain's weeping wife interfered. The mob grew ugly. Determined to avoid unnecessary violence, Cook permitted the marines to withdraw from him. Shortly, a Hawaiian messenger appeared with the unfortunately true news that a chieftain had been killed on the other side of the bay when sailors in a boat fired upon some canoes. The mob turned violent and attacked Cook and his party with rocks and clubs. Cook killed a man with his shotgun, but in the melee on the beach, and before launches offshore could help, four marines were also killed. Cook was stabbed, bled, and lost his claim to divinity. In a frenzy of anger, the mob pounced on his body, stabbing it repeatedly.

The incident shocked both sides. While the Hawaiians were willing to brave musket and cannon fire, they did not want to die if they could avoid it. Clerke, now in command, wanted to get underway again. A truce was arranged whereby the English were left unmolested as they put their ships in order—spars and tackle were ashore at the time. Clerke demanded the return of Cook's body for burial and was forced to threaten to raze the village with cannon fire to accomplish the purpose. Cook had apparently been given a chieftain's funeral by the Hawaiians, including the rite of being placed on a pyre, but eventually some remains were returned with honorific Polynesian ceremony. Clerke buried the great navigator's remains at sea on February 21, 1779.

Clerke now took command of the expedition in a manner Cook would have approved: he headed for the Bering Sea to look for the Northwest

At right, one of many European representations of the events at Kealakekua Bay.

He was a modest, methodical, remarkable man, a simple surveyor called, as George Washington was, to greater deeds. He was equal to the call.

Passage. He did not find it. He got to 70°33′ north—"five leagues short of the point to which we advanced last season," wrote Lieutenant James King of *Resolution*. *Discovery* had been severely wracked in the ice, her rigging was in tatters, and both ships were full of rot. Clerke did the sensible thing and headed south again. He was already severely ill, and he turned command of *Resolution* over to King. He died on August 22, 1779. Command of the enterprise then passed to *Discovery's* Captain John Gore. Gore saw Clerke buried decently on Russian soil and a plaque to his memory placed in the village church. Gore then consulted the officers about the best way home. Generally, the officers favored a route close to land, rather than across the Pacific—a logical decision given the condition of the ships. They ran to Macao, took on supplies, passed through the Malaysian Archipelago, thence to Cape Town. Contrary winds and some concern about colonial warships off Ireland caused Gore to run north around England rather than up the channel. The ships anchored at Stomness on August 22, 1780.

Cook would have been proud. In a voyage of more than four years, *Resolution* had lost five men to illness but none to scurvy. *Discovery* did not lose a man. The ships were so ably managed that only twice—and that briefly both times—were they out of sight of each other.

Despite the occasional use of firearms against the Maoris and despite the violent business in Hawaii, Cook's invasion of the Pacific had been a diplomatic rather than a military exercise. Cook, severe in the management of his vessels but a perfectionist in everything he did, treated every man he met with civility. We know very little about him as a person, but the absence of information typical of explorers and conquerors, so many of whom were violent and treacherous men, leads us to believe that he was the plain Norfolk farmhand's son he had always been, transported by circumstance to Hawaii or anywhere. He was a modest, methodical, remarkable man, a simple surveyor called, as George Washington was, to greater deeds. He was equal to the call, as many another would not have been, and Cook's achievements are worthy of regard as much for the conscientious, humane style he brought to them as for their substance.

Lieutenant Charles R. Low, H.M. Indian Navy, Fellow of the Royal Geographical Society, and Member of the Royal United Service Institution—in short, a fellow qualified to know—prepared an account of Cook's voyages that was published in 1895. Some of his concluding remarks provide a proper summary of Cook and his last voyage:

> During the years 1776-79 . . . this country had been engaged in her disastrous struggle with the thirteen colonies . . . though, from a political or military point of view, we have no cause to plume ourselves . . . the navy, at least, added to its laurels. This was due, however, not to the victories of its admirals, but to the achievements of Captain Cook in the more peaceful domain of science and discovery. . . .

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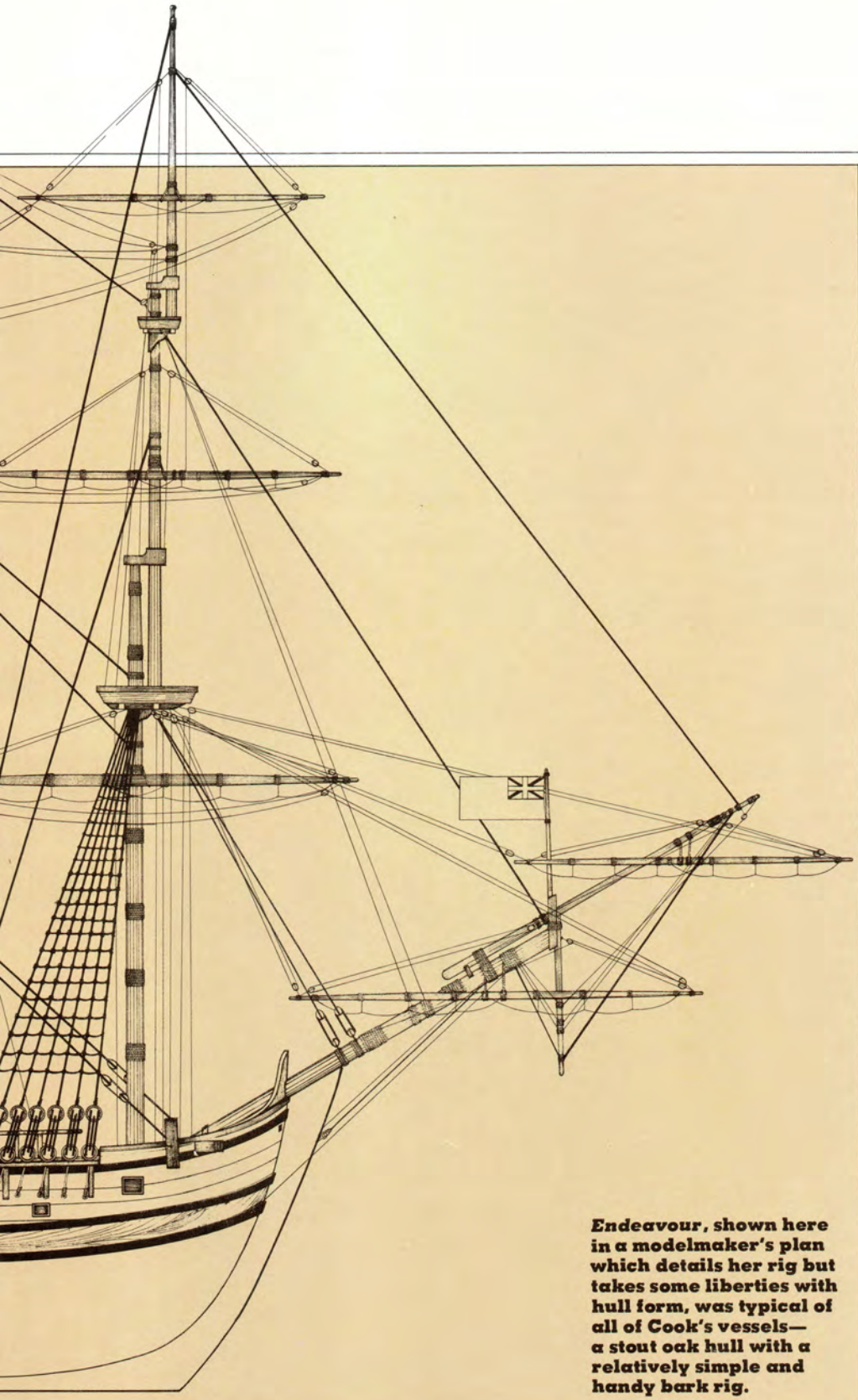
COOK'S SHIPS

The ships James Cook sailed into the unexplored reaches of the Pacific were coasting vessels shaped to carry as much coal as possible from Whitby down to London, flatbottomed to ground securely in North Sea harbors when the tide ebbed out, bark-rigged to manuever handily and to be managed simply by a few men. They were small ships ideally suited to the work of exploring strange coasts, yet they were spacious enough to carry several years' worth of provisions, tools, extra gear and rigging, and as many as a hundred men.

Endeavour's complement was 94 men, and at 106' long, 29'2" at her widest, and with about 25' between deck and keel, she was a package about as large as a single-family house. How nearly a hundred men and their supplies fit into such a vehicle, let alone sailed her 40,000 miles and lived aboard for most of three years, is a wonder. It was less a wonder in Cook's time, when East India ships made long, lonely voyages around the world, and when seamen—always a special breed—took cramped quarters, tasteless food, discomfort and danger in stride. Yet it required some special planning, a thing in which the Captain was a genius.

Cook's crew lived before the mast, and each man slung his hammock in a space decreed by the Royal Navy to be no more than 14" wide. Half the crew was below sleeping or loafing during normal weather and routine; the other half—one of two "watches"—was on deck working and maintaining the ship. The watches were further divided into groups of "messmates," usually four, who ate together.

Cook insisted that the normally damp and stuffy crew's quarters be cleaned and aired regularly, and a regimen of burning gunpowder was followed to fumigate everything from the hold to the Captain's cabin, which was nearly as cramped as the fo'csle. In warm zones, Cook did a thing unprecedented: he dispensed with the normal four-hour watch system and set up eight-on, eight-off watches that gave a sailor time to really sleep. And when the messmates of a watch took their plates



***Endeavour*, shown here in a modelmaker's plan which details her rig but takes some liberties with hull form, was typical of all of Cook's vessels—a stout oak hull with a relatively simple and handy bark rig.**

from the cook they found some additions to the time-honored diet of leathery salt beef and ship's biscuit as solid as wood. Cook made them eat sauerkraut, malt, "marmalade of carrots," concentrated soup, and fresh greens and meat taken aboard during forays ashore. He made them drink sassafras tea, concentrated lemon and orange juice, and Madeira wine. In the Antarctic, men were given a shot of brandy after their icy work aloft.

The Captain kept them healthy, but they didn't like it. Cook noted during his third voyage that "Every innovation whatever on board a ship, though ever so much to the advantage of seamen, is sure to meet with their highest disapprobation."

The health of the men and the condition of the ships were vital during voyages as long and as demanding as Cook's. The ships were planked with 4"-thick oak and protected from the ship-eating worms of tropical seas by a thick bottom coating of tar protected in turn by thin strips of wood. At sea, Cook's ships were sound enough to weather nearly any storm, and replacement gear was aboard to repair storm-wracked rigging. Alongshore, however, and in the coral islands of the Pacific, a fatal grounding was a constant worry. A lookout was stationed night and day in the foremast top, and cautious cruises alongshore were accompanied by the casting of the leadline—a weighted line marked every 12' with different scraps of cloth and leather. A good leadsman could read and call the depth every time the ship moved its own length, and he could read the line by feel in the dark. Every man aboard, in fact, could find the proper lines by feel and experience in darkness or in the fury of a storm.

Exploring rivers, estuaries and harbors, the longboats would scout ahead of the ship for a channel, and the big anchors would be ready at the catheads to be dropped as an emergency brake or set carefully when a proper anchorage was found.

Altogether, Cook's ships were self-sufficient wooden islands. Their men were no less than the "iron men" of seafaring legend.

SAIL TRAINING
AND THE TALL SHIPS RACES

BY BARCLAY H. WARBURTON III

The International Sail Training Races have been held every two years since 1956. An effort to bring together at regular intervals the last great square-riggers that still keep the sea, and the young crews which man them, the Sail Training Races have brought into being a broad-ranging program of adventure training under sail for young people. The importance of this movement, and the interest in it that has been evidenced by the throngs of people drawn to the terminal ports of the races, is a matter worthy of serious consideration. As sail training embraces programs affecting professional training, international goodwill, oceanographic research, maritime preservation, and character training, it has the ability not only to touch the lives of many but to bring to those so touched a new understanding of the potential which an inheritance from the sea holds.

Training young men under sail for careers as naval or merchant marine officers is a long-established practice still followed by many nations in the belief that time spent at sea under sail produces more competent and sea-wise officers than any other method of training.

In this age of nuclear-powered ships and guided missiles, is sail training a matter of necessity for the professional officer? That the naval officer must absorb an incredible amount of technical learning in the few short years available to him before he accedes to command is unquestioned, and how to fit time for deepwater sail training into his crowded professional schedule is a difficult problem to solve. This is, of course, a value judgement; if it still holds true that a naval officer must first and foremost be a competent seaman, then the answer is clear that time under sail—sail training—can give him the necessary proficiency more expeditiously, more profoundly, and, therefore, more economically, than a similar amount of time under power.

How is this so? Because the sailing vessel, be she large or small, is designed and built to live in the interface between sea and wind, and must therefore work in harmony with the forces of nature. The sailing ship must move with, and be able to respond to, the sea and the wind; she cannot force her way against them. The seaman quickly sees and feels this interaction, he becomes aware of how the wind affects his ship, of what the sea or the current is doing to his desired course, and ultimately how much his ship can stand. The power-driven vessel is a totally different machine; a behemoth that smashes her way through great natural forces rather than using these forces for her progress and survival. And unless the seaman knows his ship well, and understands the forces of sea and wind, even the greatest and strongest ships that man has launched can, and regularly are, humbled by sea and storm. Admiral Ernest J. King, USN, concluded that the losses of men and ships caused by the typhoon in the Philippine Sea in 1944 was the severest naval defeat the United States suffered in World War II. He attributed the cause of these losses to poor seamanship.

If the above holds true for naval officers, it is most certainly equally true for merchant marine officers. It may be, God willing, that we will be able to avoid the holocaust of nuclear destruction, but on every side there is the constant and growing menance of destruction of our seas by pollution caused by maritime

On these pages, moments of reflection and high-spirited play typical of life aboard a sail-training ship.

Training young men under sail for careers as naval or merchant marine officers is a long-established practice still followed by many maritime nations.

While the watch on deck works high in the crosstrees, the off watch loafs and makes multi-guitar music.

disasters. Each of the major oil spills of recent years, from the *Torrey Canyon* to the most recent episode off the French coast, has been the result of poor seamanship and a disregard of the sailor's adage that eternal vigilance is the price of safety at sea.

While the programs of the Sail Training Association and the American Sail Training Association do perhaps affect professional training peripherally, it is not the purpose of the Associations to produce professional seamen; this work is in the hands of those countries which believe in the value of time under sail for their professional officers and maintain sailing ships for this purpose. The STA and the ASTA run their Sail Training Races for the following purposes.

Firstly, to provide young people with challenging experiences aboard a deepwater sailing ship as part of their character-building and maturing process.

Secondly, to bring together, in friendly competition, as many young people from as many different nations as possible in a spirit of international goodwill and understanding.

Thirdly, to educate our young people in the values of our maritime traditions, in an understanding of our maritime heritage, and in the need to protect our marine environment.

In regard to our first purpose—growth through challenge—let it be said straightaway that there is still no more effective way to turn a confused young person into a responsible adult than to expose him or her to the challenging

These youngsters have learned that they can do unpleasant tasks without complaining and that they can accept discipline cheerfully.

experience of life aboard a deepwater sailing ship. You ask how much can be accomplished in the two-week span that the Sail Training Races normally cover; the answer is a great deal more than one would imagine. Often a youngster reports on board somewhat diffidently, perhaps even resentfully; almost invariably, at the end of the cruise, he or she is sad to leave and asks the skipper "When can I sail with you again?" Introduced into a complicated environment where the trainee is virtually helpless without direction, he learns to accept instruction, realizes the need for discipline in a natural way, becomes aware of each member of the crew's dependence on every other, and perceives that he or she is of importance to the whole. Much of his time aboard may be spent on unpleasant tasks such as cleaning the heads, working in the galley, and polishing brass; but there are glorious moments of standing a trick at the wheel, of sailing under star-filled skies, of an early morning landfall. Out of the sail-training experience there comes the confidence in self gained through making oneself do something one does *not* want to do: to turn out of a warm bunk when it is cold and wet and miserable on deck; to go aloft in a gale when one is frightened; to do these things not because one is forced (there are no punishments aboard sail training ships) but simply because one knows one's shipmates are counting on one to do the assigned job. These challenges provide satisfaction and confidence, and they add up to a mature outlook.

It has been said that sail training is the third dimension of education; intellectual achievement and athletic prowess are of little use if the individual is lacking in strength of character. Character cannot be learned from a book; it can only be acquired through challenge. The tougher the challenge, the faster the growth. And the youngster who perhaps has had trouble in meeting some challenges has still learned a great deal about himself and about the areas within himself which need to be strengthened.

To see young men and women leaving a ship clear-eyed, confident, courageous, helps one to know that these are young people who will not only be able to acquit themselves well in any situation, but will also be able and willing to forthrightly tackle the jobs that need doing in order to set our world to rights. These youngsters have learned that they can do unpleasant tasks without complaining and that they can accept discipline cheerfully. They have pushed themselves and found joy in doing so. As Captain Kjell Thorsen, Master of *Christian Radich,* has said: "In our modern plastic world, they have few opportunities to meet a challenge and prove themselves."

Chores aboard make clear the value of teamwork, whether ganging the wheel or accomplishing individual tasks on which the pride and safety of the vessel depend.

The second of the STA/ASTA's purposes—fostering international goodwill—needs little explanation to those who have witnessed the gatherings that follow a "Tall Ships" Race. Following the finish of a race there is always an In-Shore Regatta—an inter-ship sports competition that includes sailboat races, rowing races, soccer matches, a swimming meet, volleyball games, and a tug-of-war—in which young people from different countries get to meet one another as they engage in friendly competition for the pride of their ship. During the "Tall Ships" gatherings, there is always a Cruise-in-

This is the great purpose of sail training—that the greatest handiwork of man, the sailing ship, shall be borne across the greatest handiwork of God, the sea, to bring together our young people in friendship.

Company with a crew interchange; youngsters from small ships sail aboard the large ones and vice-versa, and boys and girls from all the competing countries are exchanged among the ships. This is an invaluable experience for all where language barriers are quickly overcome and a common interest—the sea—binds an international crew in working the ship. In 1972, after the crew interchange at Kiel, Captain Cassidy of USCGC *Eagle* told the writer that at one point eleven different languages were heard aboard his ship, yet the trainees from so many nations had no trouble in communicating with one another. Finally, there is the colorful Prize Giving Ceremony, attended by all the trainees in uniform—some in the crisp whites of Naval cadets and some simply in dungarees with a T-shirt bearing the name of their ship—during which prizes are awarded to those ships and individuals who have distinguished themselves in the Off-Shore Races and in the In-Shore Regatta. In addition to winners, prizes are traditionally given for such unusual accomplishments as "The first ship to finish with an all-girl crew," "The first to finish with a female crew member aboard," "The cook on the last ship to finish," "The ship that has come the farthest distance," and other imaginative categories that help the competitors to understand that the object is not so much to win as it is to take part with a will. In fact, the premier trophy is the "Cutty Sark International Trophy" awarded to the ship which, by the vote of all Captains present, has done the most for international understanding during the Races. This trophy has been won by the Polish ship *Dar Pomorza,* by the Soviet ship *Kruzenshtern,* and by the small Belgian Navy Ketch *Zenobe Gramme.* Ashore, cadets and trainees mingle at hospitality centers and parties, friendships are formed, and understanding grows.

It would be hard indeed to find another international event which so clearly exemplifies the spirit of friendship between the nations. This is the great purpose of sail training—that the greatest handiwork of man, the sailing ship, shall be borne across the greatest handiwork of God, the sea, to bring together our young people in friendship.

Thirdly, the educational benefits of the Sail Training Races are enormous, if perhaps less directly observable than the character-building and international aspects. Several of the ships that take part in the Races are oceanographic research vessels, notably the American schooner *Westward* and the barquentine *Regina Maris.* The trainees aboard these ships are primarily college-level students following courses in the marine sciences; the ships engage in programs ranging from studies of the life cycle of the Humpback whale to laboratory examinations of various forms of plankton. In addition to their studies aboard ship, the students work the vessel as crew members, and the rich interrelationship of man, the ship, the sea, and the life in the sea unfolds daily before them. These ships pursue their separate ways and programs, but the opportunities provided every two years by the International Sail Training Races to exchange ideas with other students from foreign countries, to expose their ships and programs to the public, and to inform the public about the need to protect the delicate ecology of the sea are invaluable indeed.

As a concomitant to the spectacle of great sailing ships gathered in a port

Flying-fish weather—at the wheel and teamhanding a stubborn brace.

In the overprotective society in which we live today, sail training is one of the few areas left where young people may exercise their God-given right to dare.

comes an awakened interest in mankind's maritime heritage. The vast crowds that flock to a seaport fortunate enough to host a visit of the "Tall Ships" are evidence of the tremendous interest of the general public in our seaborne traditions, values, and commerce. This phenomenon has been evident in the ports of Europe and the United Kingdom during the twenty years that the STA has run the Sail Training Races; in 1976 it reached new proportions when the Sail Training Association selected Newport, RI, as the terminus for its Transatlantic Race. During a five-day period, 750,000 people visited Newport. Among the events in Newport was an educational symposium called "Tall Ships and the Living Seas" at which world-renowned author, explorer and scientist Thor Heyerdahl was the principal speaker. The attendance by many millions of people at the ensuing "Operation Sail '76," when the ships visited New York, Boston, and Baltimore for the Bicentennial festivities, was solid testimony to a tremendous interest on the part of the public.

A direct result of the 1976 interest in the sail-training ships was the first Maritime Heritage Conference held at Baltimore in 1977. Organized by the Maritime Committee of the National Trust for Historic Preservation, this Conference was held at the time of the Annual East Coast Sail Training Races run by the American Sail Training Association. A similar conference, this time to explore the traditions and skills associated with small-boat building, is again being held by the Maritime Committee at Norfolk, VA, during 1978's East Coast Races.

Although interest in our maritime heritage grows apace, the United States still lags far behind Britain and the nations of Europe in providing sail-training opportunities for our young people. Regulations governing the carrying of passengers for hire apply to any ship which charges trainees for their educational experience, and these mean restrictions which are costly and unnecessary for sail trainees. Similarly, high insurance costs make it difficult, if not impossible, for training

Maintenance work and working ship are constant, and constantly enriching.

ships to carry trainees as crew members. These matters have resulted in a situation where, from 1956 to 1972, no American vessel ever took part in a Sail Training Race; since that time, the ASTA-sponsored Sail Training Races have led owners of both commercial ships and yachts to seek ways to participate in sail-training activities. To ease the burden upon serious sail trainers, the ASTA has had a Sail Training Vessels Act prepared which, it is hoped, will find sponsors in the Congress.

The preservation of our Maritime Heritage must mean the preservation of the arts, skills, and crafts of the sailor and shipwright, and the passing on of the values of the seagoing experience to succeeding generations. It must be more than the preservation of artifacts and museum ships. Accordingly, the ASTA has in preparation a Maritime Heritage Act which will provide Federal funds not only for the preservation of properties, but also for the establishment of a National Register of Historic Maritime Arts, Crafts, and Skills. Programs on the Register will be available for Federal funding on a matching-grant basis so that the historic arts, crafts, and skills of the mariner and shipwright will be handed on to future generations.

Sail training, as can be seen, is a very broad program that embraces sailing-ship activities that range from ship construction to oceanographic research to maritime preservation. The Sail Training Races are only a part of this broad program, but they are the catalyst that engenders the interest and support that make possible the programs for our youth.

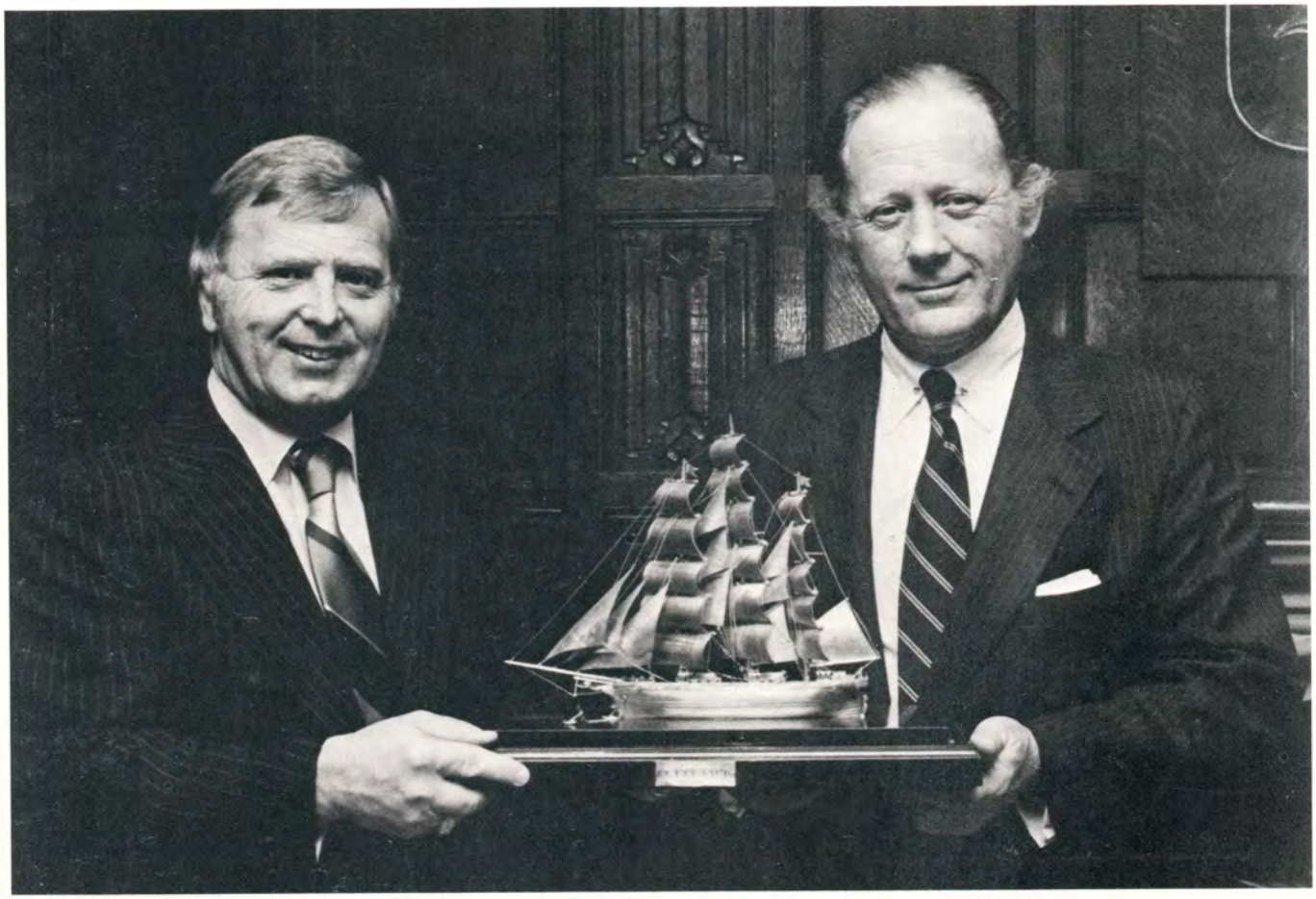
Surely it is our youth who will turn our eyes seaward again, just as, in past centuries, the youth of the world—ship's boys at twelve, mates at eighteen, masters at twenty-two—conquered the seas, established commerce, and brought the nations in touch with one another. The youth of today are no different from those of the past: they seek adventure; they need challenge; they wish to prove themselves. In the overprotective society in which we live today, sail training is one of the few areas left where young people may exercise their God-given right to dare. The older generation must not rob them of this right; mature adults may design ships, enact legislation, and run museums, but it is our youth who must keep the sea.

Joseph Conrad concluded his story "Youth" with eloquent testimony to youth at sea: "By all that's wonderful, it is the sea, I believe, the sea itself—or is it youth alone? Who can tell? But you here—you all had something out of life: money, love—whatever one gets on shore—and tell me, wasn't that the best time, that time when we were young at sea; young and had nothing, on the sea that gives nothing, except hard knocks—and sometimes a chance to feel your strength . . ."

Youth and the sea and the ship—a trinity which has brought us so far; a trinity which may yet unite us all. Another great Polish shipmaster, Captain Kazimier Jurkiewicz, Master of *Dar Pomorza* for twenty years, and perhaps the greatest of all sail-training shipmasters, when speaking about the forthcoming Transatlantic Sail Training Race in 1976, put the concept of international unity into these eloquent and preceptive words: "Truly, the sea can be our bridge."

Barclay H. Warburton III is President of the American Sail Training Association.

THE CUTTY SARK TROPHIES



At left, Cutty Sark President and Chairman Edward A. Horrigan; at right, A.S.T.A. President Barclay H. Warburton III.

A formal and fitting conclusion to the hard work and high spirits of the Tall Ships Races is the Prize-Giving ceremony, and a focus of the ceremony is the presentation of the Cutty Sark trophies. These trophies have been donated by Cutty Sark in memory of the great ship whose name the company has adopted, and in recognition of the maritime heritage which the Tall Ships Races celebrate. The American Sail Training Association is grateful to Cutty Sark Scotch Whiskey, and their distributors in Canada and the United States, Basil D. Hobbs Co. Ltd. and the Buckingham Corporation, for the gift of these beautiful trophies.

The Cutty Sark Friendship Trophy recognizes what is perhaps the principal purpose of the Tall Ships events—the fostering of that brotherhood of the sea which has characterized the meeting of seamen of many nations down through the centuries. The trophy, a silver model of the renowned tea clipper *Cutty Sark,* is presented by Cutty Sark Scotch Whiskey as a challenge trophy to be awarded to the vessel which does most to encourage and foster international friendship during the Tall Ships Races.

In awarding the trophy, the Committee takes into account (a) The general understanding and implementation of the concept of Tall Ships Races, which is that young people of all nations engage in friendly rivalry at sea and form friendships ashore, thus promoting international goodwill; (b) The willingness of the officers and crew of a vessel to welcome crew members of other vessels aboard, and the vessel's availability to the public for viewing; (c) Any self-sacrifice by a vessel or its crew in the interests of assisting other vessels which may require help of any kind while racing or not; (d) The cooperation extended during any crew interchange arrangements; (e) The integration of a ship's company with that of other vessels at organized events ashore.

The winning ships in Class A are awarded the Cutty Sark Winners' Trophies. In the races of Tall Ships Pacific '78, the winner of each of the three competitions is presented with a handsome silver trophy which remains with the ship.

THE TALL SHIPS

Ships that represent Pacific nations from the United States to Japan to Chile will participate in Tall Ships Pacific 1978, and in the three Tall Ships Races that will bring them to Canada and the U.S. On the following pages, Class A ships which are expected to join the fleet are reviewed. They are among the last deepwater sailing ships in active service, a glorious gift to our harbors this summer and a remembrance of our rich sailing-ship heritage.

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LIBERTAD ARGENTINA FULL-RIGGED SHIP

Length overall	338′
Beam	44′4″
Draft	21′10″
Sail area	28,450 sq. ft.
Home port	Buenos Aires
Built	1960

A big, modern sailing ship with a flush deck and with a pilothouse forward of amidships, Argentina's *Libertad* sailed a maiden voyage to European ports in 1960 and has been active ever since in Sail Training Association races and gatherings in the Americas and in Europe. Her first voyage took her to Puerto Rico, Bermuda, Lisbon, LeHavre, Hamburg, London, Cadiz, Dakar and home again, and she was much admired in the ports she visited as the newest and brightest of the world's sail-training vessels.

During her 15-day stay in Hamburg, she was visited by 30,000 people. Larger than most of the world's sail-training ships, she has very pleasing proportions in hull and rig, and she keeps the look of the big full-rigged ships of old with a few concessions to her role as a training vessel. Among these are a maindeck house surmounted by a funnel for engine exhaust, the high forward pilothouse, and a shorter rig than the sailing cargo ships of the last century. She has a complement of 351 that includes 24 officers, 39 engineering cadets and 49 deck cadets as well as 239 petty officers and crew. She has visited U.S. ports a number of times, and she is expected to visit West Coast ports this summer as part of the Tall Ships Pacific fleet. In 1964, she took part in the Sail Training Association's transAtlantic races from Lisbon to Bermuda and went on to the first Operation Sail in New York. In 1976, she joined the S.T.A. Tall Ships Race fleet at Bermuda, racing to Newport and participating in Operation Sail in New York.

EAGLE UNITED STATES BARK

Length overall	294'5"
Beam	39'4"
Draft	17'
Sail area	21,345 sq. ft.
Home port	New London
Built	1936

Our own *Eagle*, launched in 1936 as the German sail-training vessel *Horst Wessel*—and a sistership to Romania's *Mircea*, Portugal's *Sagres II* and Russia's *Tovarich*—has trained thousands of U.S. Coast Guard officers since 1945. During World War II, the Danish sail-training ship *Danmark*, which had come to the U.S. for the 1939 World's Fair, was lent to the U.S. Coast Guard by her captain and she served as a C.G. sail-training vessel until the war's end. The experience influenced the Coast Guard to claim one of the four German sail-training barks available as war reparations, and Germany's *Horst Wessel* became America's *Eagle*. Based at the U.S. Coast Guard Academy in New London, Connecticut, *Eagle* sails with 19 officers, 46 crew and 180 cadets. Her normal schedule takes her on a long cruise, often to European ports, with the Academy's 1st and 3rd classes aboard; a second, shorter cruise involves the Academy's 2nd and 4th classes. She makes frequent visits to U.S. Atlantic Coast ports, and her participation in Tall Ships Pacific '78 is her second visit to the Pacific Coast. *Eagle* is the largest U.S. sail-training vessel, and her example has done much to promote the cause of sail training on these shores in smaller vessels operated by maritime museums, schools and foundations, and under private ownership.

NIPPON MARU
KAIWO MARU

JAPAN

BARK

Length overall	318'4"
Beam	42'6"
Draft	22'7"
Sail area	25,800 sq. ft.
Home port	Tokyo
Built	1930-31

Sisterships built in 1930 and 1931 by the Kawasaki Dockyard Co. as sail-training vessels of the Japanese merchant marine, *Nippon Maru* and *Kaiwo Maru* are imposing four-mast barks distinguished by high pilothouses and bridge wings forward of amidships. The high forward bridge, supplemented by a wheelhouse aft for steering under sail, is one of many modern features of both ships. Another is accommodations for cadets in cabins rather than in traditional hammocks slung in a crowded cadet flat.

Cadets aboard both ships are in their final years of preparation for a Second Mate's examination and are experienced mariners before they come aboard. Both vessels are designed for 120 cadets in a crew that includes 48 professional seamen and 27 officers. Both ships have served nearly full time as training vessels since their launching, although immediately after World War II they were used to repatriate Japanese troops and civilians. They are frequent visitors to ports in the Far East during training voyages. *Nippon Maru* has visited the United States several times since her recommissioning in 1952, most recently as a participant in the Tall Ships Races and Operation Sail in 1976. She came the greatest distance of any ship in the 1976 fleet, and she underwent a $3 million refit in preparation for the spectacular sailing events of our Bicentennial.

GLORIA COLOMBIA BARK

Length overall	249'3"
Beam	34'8"
Draft	15'9"
Sail area	15,069 sq. ft.
Home port	Cartagena
Built	1968

An especially beautiful sail-training ship, and one of the world's newest, Colombia's *Gloria* was launched by Sstilleros y Talleres Celaya S.A. of Bilbao, Spain, in 1968 for the Armada Nacional de Colombia. Her sistership *Guayas* of Ecuador was launched this past year by the same Spanish yard. With a Thames measurement tonnage of 1300, she is one of the new generation of large barks built for sail training by the world's navies, and she is distinguished by a modern rounded stern and by a big enclosed pilothouse forward of the mizzenmast. A modern modification of the sailing merchant ship, she has the fine lines of a vessel designed to carry people rather than cargo, and she is kept Bristol Fashion by her large professional crew and by the cadets who come aboard for her training cruises. A great winged figurehead is mounted below her highly-steeved bowsprit. *Gloria* has been active in the races and gatherings of the Sail Training Association during the past decade on these shores and in Europe. In 1972, she joined the S.T.A. fleet for the Helsinki-Falsterbo Tall Ships Race, then joined some 80 other sailing vessels for the great gathering at Kiel. In 1976, *Gloria* met the Tall Ships Race fleet in Bermuda and raced to Newport, R.I., then sailed on to New York for Operation Sail. It is anticipated that she will join the Tall Ships Pacific fleet this summer. She sails from Cartagena with a permanent crew of 50, including nine officers. Her cadet complement is normally 60.

REGINA MARIS UNITED STATES BARKENTINE

Length overall	119′
Beam	26′
Draft	10′
Home port	Boston
Built	1908

Acquired by the Ocean Research and Education Society of Boston in the early 1970s, the barkentine *Regina Maris* has had an interesting history since 1908, when she was launched for the Atlantic trade. A typical Baltic trading vessel built of oak by Ring Anduson of Svendborg, Sweden, she remained a sailing vessel until 1933 when she was converted to power and served in the nitrate trade. From 1957 to 1965 she was laid up, and in the mid-1960s she resumed Baltic coastal trade under Norwegian ownership. She is now rerigged and refitted, and she spent winter and spring in the Caribbean this year on Green turtle research and on whale population surveys at Silver Bank off Grand Turk. She is expected to join the Tall Ships Pacific fleet if her schedule will permit a passage to the Pacific. *Regina Maris'* Caribbean research is typical of her nearly year-round schedule. She takes marine biologists and pollution-control scientists to sea for voyages of several months, and her normal sphere of operation is the Atlantic Coast from Labrador down to South America. She sails with two officers and a permanent crew of 18, and normally signs on 25 students whose participation in a research voyage is part of their curriculum at colleges throughout the U.S. Her equipment includes a marine biology lab and gear for general ocean research, with ecological and pollution work a specialty. *Regina Maris* sailed with the Tall Ships Race fleet from Bermuda to Newport and New York in 1976.

ESMERALDA CHILE BARKENTINE

Length overall	370'10"
Beam	42'8"
Draft	19'8"
Sail area	30,700 sq. ft.
Home port	Valparaiso
Built	1952

At 3500 tons displacement and 370'10" overall length, the Chilean Navy's *Esmeralda* is the largest sail-training vessel in commission. A sistership to Spain's *Juan Sebastian de Elcano,* but with a barkentine rig that sets only square-sails on the foremast, she is named for a gallant Chilean warship that won victories in 1879 in a war with Peru and Bolivia. She was intended as a second sail-training vessel for the Spanish Navy, to have been named *Juan D' Austria,* but she was bought by the Chilean Navy while still incomplete. Like *Juan Sebastian,* she is reminiscent of the big schooners that were launched in the early years of this century for U.S. coastwise trades, although her lines and finish are worthy of a yacht. *Juan Sebastian,* with a gaff sail set on the foremast in addition to square-sails, is a full topsail schooner. *Esmeralda's* sails are brailed up to the yardarms instead of being gathered up against the mast. Her deck layout includes a very long forecastle that ends forward of the mainmast and a poop that continues to the mizzen. As there is aboard *Juan Sebastian,* a small navigating bridge is atop *Esmeralda's* midships deckhouse. She cruises with a complement of 332 officers, petty officers, crew and cadets, and she makes frequent calls at the Pacific ports of the Americas. She joined the fleet of Operation Sail in New York in 1964 and again in 1976, and she raced from Bermuda to Newport in the 1976 Tall Ships Races.

OSPREY

BRITISH CROWN COLONY OF HONG KONG

BARKENTINE

Overall length	174′
Beam	23′
Draft	8′
Home port	Hong Kong
Built	1937

Osprey was launched in 1937 at Gothenburg, Sweden, as a steel cargo vessel, and was a motor ship for several decades in European waters, principally serving the grain trade between Germany and Sweden. She was rerigged as a barkentine in the early 1970s, and she is currently owned by Parkwood Ltd. of Tokyo, a diversified firm in the resort and hotel business which plans to employ her for film and charter work and as a sail-training vessel for a private Japanese nautical training school. A big, white barkentine with green trim, *Osprey* comes to Tall Ships Pacific '78 with a professional crew of 12, two of them women, and seven ship's officers. Her sail-training complement is 30 trainees. A new vessel in the international sail-training fleet, she is expected to sail transAtlantic with U.S. and Latin American vessels in 1980 to participate in Tall Ships races and gatherings in the Baltic where she began her adventurous career four decades ago.

GUAYAS

ECUADOR

BARK

Waterline length	184′
Beam	34′9″
Draft	13′9″
Home port	Guayaquil
Built	1977

The world's newest sail-training vessel, *Guayas* was built last year by Sstilleros y Talleres Celaya S.A. of Bilbao, Spain, for the Ecuadorian Navy. She was delivered in October; sailed a shakedown cruise in November and December; and began an ambitious maiden voyage in mid-January. The first voyage—a circumnavigation of South America which is expected to bring her in mid-summer to Tall Ships Pacific '78—includes diplomatic visits to Lima and Valparaiso, then through the Straits of Magellan to the southern Argentinian ports of Ushaia and Porto Belgrano, then on to Montivideo and Rio de Janeiro. *Guayas* is a nearly identical sister to Colombia's *Gloria,* a three-mast bark with a large, modern pilothouse on deck just forward of the mizzen and with all the facilities of a floating school capable of remaining at sea for 45 days. *Guayas* is named in memory of the first steamship to be built in South America in 1841. She has a normal complement of 115—15 officers, 80 student midshipmen, 10 service personnel and 10 professional hands. On her maiden voyage, and her possible visit to West Coast ports with the Tall Ships fleet, she will bring honor cadets from other Ecuadorian service academies in addition to her complement of Naval midshipmen, along with a larger professional crew for a maiden voyage of thousands of miles.

CAPITAN MIRANDA

URUGUAY

SCHOONER

Length overall	176′
Beam	26′3″
Draft	10′
Home port	Montivideo
Built	1930

Uruguay's entrant in the Tall Ships Races and Tall Ships Pacific '78 has served her nation's Navy for more than a decade after being commissioned for schoolship service. Built in 1930 as a sailing cargo carrier, and active in various trades in Latin America after World War II as a power vessel with her rig removed, she was given a new rig and a new lease on life during the 1960s. Rerigged as a three-masted schooner with bermudan sails, the 600-ton vessel has a crew complement of 85 officers and trainees and makes frequent port visits during her training cruises in Latin America. Her participation in Tall Ships Pacific '78 is her first visit to the United States as a schoolship.

CLASS B VESSELS
AND THE SEA EXPERIENCE

BY EDWIN OSBORNE

Aboard the Seattle schooner *Adventuress*, a 17-year-old girl picks out a dark form in the brightening whiteness of a morning fog; it's the buoy she expected, just where she expected it would be. On the New York schooner *Pioneer,* a boy whose worn sneakers are tied with lumpish knots belays a spring line to a deck cleat with a satisfying symmetry—better than he did it last time. In the pilothouse of the Boston research vessel *Westward,* five college students identify a school of cod on the chart recorder and listen as an oceanographer tells them where the fish are headed and why.

These are Class B vessels and Class-B-vessel experiences, less spectacular perhaps than the sea showmanship of uniformed cadets high in the rigging of a schoolship, but more significant perhaps as subtle turning points in young lives. Sail training for sea experience and the vital lessons it can teach is the province of Class B vessels and programs—local museum ships, research vessels and yachts that take young people 16 to 25 to sea and bring them back changed for the better. The big Class A ships of the world's sail-training fleet are floating schools which prepare cadets for naval and maritime careers. They teach their crews traits of character in the process of teaching formal courses in everything from diesel mechanics to calculus; but the development of courage, initiative, confidence, and an easy, sea-wise acceptance of other people is only part of the program.

Aboard the Class B vessels it is the whole program. Organizations which sponsor the smaller sail-training vessels

At left, Sausalito's *Lady Frei*, a topsail schooner; at right, the ketch *Astral* from Monterey Park, Cal.

Class B vessels and programs are each different; but each is a school of experience whose lessons are basic, subtle, valuable beyond measure, lessons unique to voyaging under sail.

are as varied as the little ships themselves: private schools like Tabor Academy, whose *Tabor Boy* cruises the New England coast during the academic year and sails to Bermuda in summer; non-profit educational groups like Seattle's Youth Adventure, Inc., whose *Adventuress* takes young people, principally Girl Scouts, on weekend voyages year 'round and on ten-day sailing sessions during the summer; maritime museums like Mystic Seaport, whose schooner *Brilliant* has given more than 3000 young people valuable sea experience over the years; ocean-science educational foundations like the Sea Education Association, whose 125' topsail schooner *Westward* logs 25,000 miles each year with students aboard; and owners of yachts like Cornelius Vanderstar of Monterey Park, CA, whose ketch *Astral* brought a crew of young men and women to Operation Sail in New York two summers ago and will join the Tall Ships Pacific fleet this summer.

Each of these vessels and programs is different; but each is a school of experience whose lessons are basic, subtle, valuable beyond measure, lessons unique to voyaging under sail. Mystic Seaport's Captain Francis Bowker, once a coasting-schooner master and now the skipper of the Seaport's *Brilliant,* expressed the worth of sail training in comments he made to the American Sail Training Association's Fourth Annual Conference:

"The world may have changed, and even the power of steam has been relegated to obsolescence; atomic power has become commonplace and men have trod the surface of the Moon; yet the sea has not lost its grasp upon the imagination of the young. There is still the challenge of irresistable force, vast horizons and the will of man to conquer his fears in a battle that consists of monotony, boredom and a building of courage, to face elemental forces of nature that must eventually be the lot of one 'who goes down to the sea in ships' ... Most trainees are clear-eyed, physically-fit young people with a world to conquer and a ship in which to learn discipline and self-respect from meeting

At left, the Canadian Navy's sail-training ketch *Oriole*, based in Esquimault. Above, Mystic Seaport's schooner *Brilliant*.

challenges found in few other schools. Standing a watch when one is sick, exhausted, cold and wet is a mountain to climb, and one who has conquered such experience stands at the pinnacle of self-esteem. He has also learned that alone he is weak, but as part of a team 'a pound of him is as good as a pound of anybody else,' as an old captain I once knew told his small sons when he brought them aboard ship."

What Captain Bowker describes is an ancient rite of passage, the most time-honored educational process of all, a trial and an triumph that Joseph Conrad described as "the best time, that time when we were young at sea; young and had nothing, on the sea that gives nothing, except hard knocks, and sometimes a chance to feel your strength."

In this, sail experience aboard Class B vessels is an active form of maritime preservation, a passing on to a new generation the skills and attitudes and character traits necessary to bring a little ship safely to port. Maritime museums have their value in the passive preservation of our maritime past, but sail-training programs such as those of the A.S.T.A's Class B vessels bring the past into the present, keeping it active and alive.

In events as spectacular as Tall Ships Pacific '78, the smaller sail-training vessels are seen as part of a pageant, and a smaller part because of their size than the big square-rigged schoolships. But in their home ports, as they carry the skills of sail to another generation and influence the direction of young lives, they loom as large as any clipper.

Edwin Osborne is West Coast editor of Nautical Quarterly.

HANDICAPPING TALL SHIPS AND SMALL SHIPS

BY COLONEL R.G.F. SCHOLFIELD, FRIN
TECHNICAL CONSULTANT, SAIL TRAINING ASSOCIATION

Editor's note: With the exception of yachts and small racing sailboats designed and built exactly the same ("one-designs"), sailing vessels have an amazing diversity in hull form and in sailplan. When a fleet of such diverse vessels race, they are handicapped one against the other by rating rules which equalize their characteristics in some very complex mathematics whose result, on the race course, is a time allowance which gives a slower boat more time to reach the finish than a fast one. This is why the first boat to finish a race is not necessarily the winner. Winners are declared on the basis of their "corrected time," which is their "elapsed time," or the time it has taken them to sail the course, with their time allowance subtracted from it.

The calculation of such rating rules is a mind-bending exercise in engineering, higher mathematics and such imponderables as a vessel's age and condition. It can be said that, despite all good intentions, no rating rule has ever been perfect. The history of yacht racing is a history of ever-evolving rating formulas accompanied by stormy post-mortems after races, continual grousing over the inequities of the rule of the moment, and the conscientious application of calculators and guesswork in every yacht-design office in the world in an effort to design racing yachts that will sail fast through loopholes in the rule. Interesting business.

The Tall Ships Races, with their fleets of vessels as diverse as 30' racing yachts and former grain-fleet ships, present perhaps the most complex rulemaking problem of all. Like the rulemaking of yacht racing, Tall Ships rating systems represent an evolution of formulas that attempt to come ever closer to encompassing the performance possibilities of every vessel in every race. Colonel Scholfield describes that evolution below. He knows it better than anyone, and it is his responsibility to apply the S.T.A.'s "confidential" formula to measurements of each ship and yacht in a Tall Ships Race. For this, he has the help of a Hewlett Packard 97 calculator which was a gift to the American Sail Training Association from Hewlett Packard. Colonel Scholfield tells us that it has shortened his work load enormously. A.S.T.A. is most grateful to Hewlett Packard for their generous gift.

When the Sail Training Association organized the first Tall Ships Race in 1956, competitors with a Royal Ocean Racing Club Certificate competed under this rating in a special class (Class III). For the square-riggers (Class I) and fore-and-aft-rigged vessels without an RORC rating (Class II), the late Ray Barrett, who was a prominent member of the RORC Technical Committee, produced a rating rule which served its purpose well for the first and second races. It is unfortunate that no copy of this rule exists today. The late George Gill, who had been a yacht designer and was a member of the S.T.A. Council and Sailing Committee, produced a new rule for the 1960 race which was based on what he knew of Ray Barrett's rule and on his own knowledge of hulls, rules and the complex mathematics of yacht handicapping. He proudly called his rule "Rough Justice." It was considered to be an improvement on the first rule and was used without alteration up to 1966.

There were two basic disadvantages to the rating systems used until 1966: firstly, the RORC rule definitely favored the modern ocean racer, and the old and old-fashioned had no chance of appearing in the prize lists. Secondly, the fleet was racing under two different rules and there could be no overall winner. It was for these reasons that the Sailing Committee decided, at the end of 1966, to ask the well-known and versatile British yacht designer Colin Mudie to produce a rule which could be applied to all competitors—from the large square riggers down to small, modern ocean racers. It did not take him

Class A and Class B race on equal footing thanks to the S.T.A. rating system. Here, *Eagle* and *Black Pearl* contend.

The rating rule is still evolving, and it is perhaps still "Rough Justice," but it is a vital part of the on-going work of organizing the Tall Ships Races.

A Hewlett Packard 97 calculator helps Colonel Scholfield through the maze of mathematics required in applying a rating formula to the particulars of a variety of ships and racing yachts.

long to come up with a basic rule based on the relationship between sail area, displacement and length, and after many months of tedious work a comparatively satisfactory handicapping formula came into being for the 1968 race.

The Committee, however, had decreed that it would be undesirable to ask owners for information which did not appear on RORC Rating Certificates, and experience during 1968 showed that this had been a mistake. An amended rule, including more data on the sails in the foretriangle was then produced for 1970.

Since 1970, the rule has been amended twice and is now in the process of yet another and more far-reaching revision. Each time we are striving to find a formula which more fairly assesses a vessel's speed capability under different sailing conditions. To this end we have already given very good allowances for such features as gaff rig, bowsprits, old age, shallow draft, etc. In addition, every rig has its own rig allowance, and different types of sail are given different values: for example, a squaresail is valued at a certain percentage of a bermudan sail of the same area in the rig of a smaller, ocean-racing yacht.

The S.T.A. rating rule is a simple one and we know that a designer could, without difficulty, find ways of defeating the rule and designing around it to produce a fast vessel with a low rating. This is why our rule is "confidential" and is not allowed to be seen by anyone outside the Sailing Committee, along with of course, Colin Mudie, who is always ready and willing to advise us.

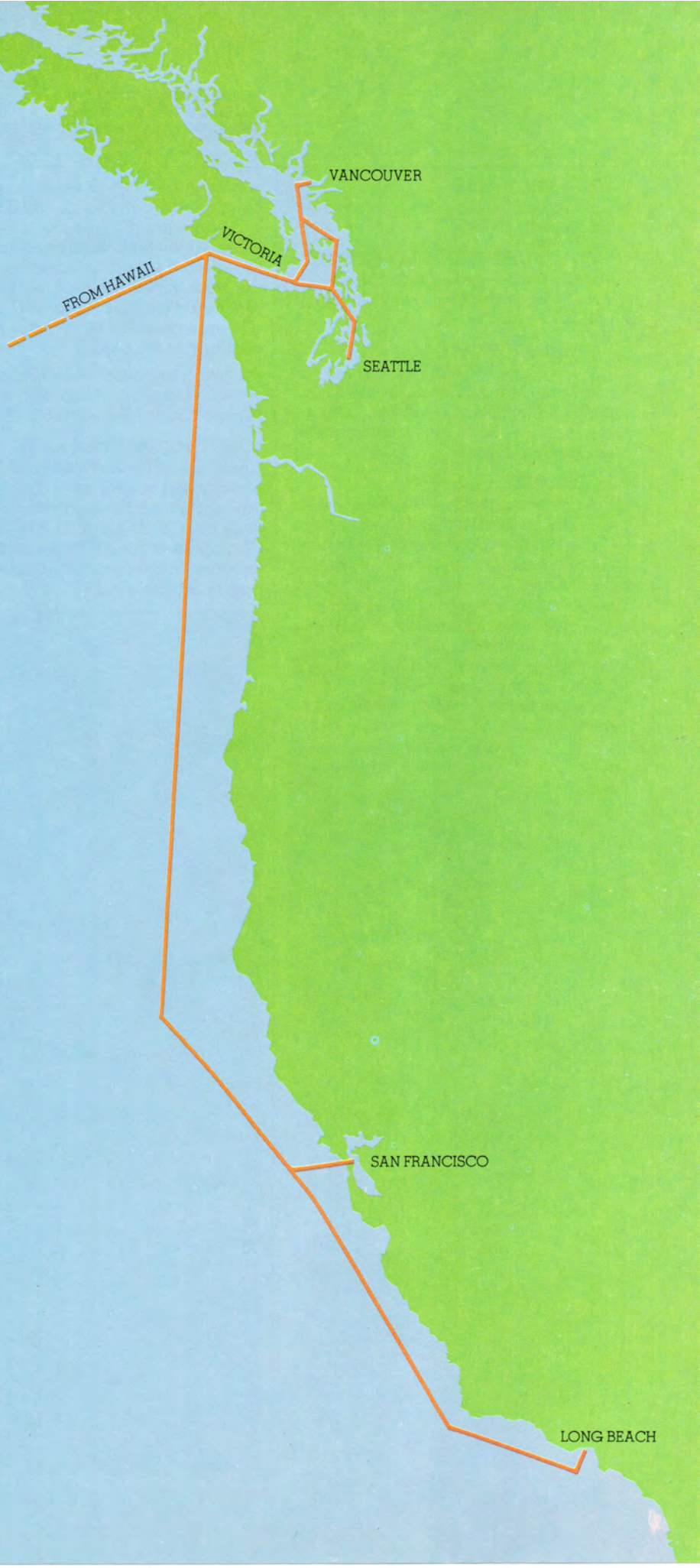
Ratings can be calculated from any of the following: (1) An I.O.R. Rating Certificate; (2) A sail plan and either lines drawing or mid-section drawing; (3) A specific measurement of the hull and sails. Copies of the measurement form with explanations as to where each measurement must be taken are made available by the Race Office of S.T.A. In all cases certain additional information is required.

Finally, it must be stressed that ratings cannot be calculated unless necessary information and measurements are available. Under no circumstances are we prepared to guess or estimate in order to produce a rating and so allow a competitor to take part in a race.

"Form" is never taken into account when a vessel appears to have too high or too low a rating compared to her performance. Altogether, we seem to have evolved a rating rule—a handicapping formula—which accounts for the great diversity of vessels in S.T.A. Tall Ships Races and the even-greater diversity of conditions they may encounter at sea. It is still evolving, and it is perhaps still "Rough Justice," but it is a vital part of the ongoing work of organizing these races throughout the world every two years.

TALL SHIPS PACIFIC MAPS AND SCHEDULES

On the following pages, particular dates, activities and locations for the visits of the Tall Ships Pacific fleet to six cities are given with as much accuracy and detail as possible. Information is correct as of May 1, 1978. There will likely be more events on each of these waterfronts than is possible to publish here, and there may be—with the vagaries of wind, weather and the plans of local committees—a change or two in what is published in these pages. Last-minute information may be had by making use of the information telephone numbers given for each city.



HONOLULU

TUESDAY, JUNE 20
A.S.T.A. Tall Ships Race vessels arrive in Honolulu Harbor.

WEDNESDAY THROUGH FRIDAY
Vessels are docked along the Aloha Tower Pier and are open to visits by the public.

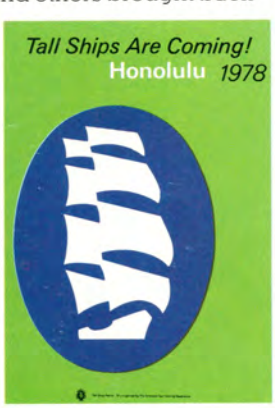
SATURDAY, JUNE 24
The Tall Ships Race to Victoria, B.C., following Captain Cook's course from the Hawaiian Islands to British Columbia, begins at Noon from a starting line off Diamond Head.

ACTIVITIES:
Hawaii recognizes two maritime anniversaries in 1978—the 200 years since Captain James Cook stepped ashore on a Kauai beach in January of 1778 and the 100 years since *Falls of Clyde* was launched in Scotland in 1878. Cook's 1778 discovery of the Hawaiian Islands will be commemorated by events throughout the year, and his three voyages to the Pacific will be documented in a major exhibition of objects Cook and others brought back to England. The Cook exhibition has been mounted by Honolulu's British Museum. *Falls of Clyde*'s hundred years, which included Hawaiian maritime history when she sailed as one of the original Matson ships, will be recalled at Pier 5 in Honolulu Harbor where the vessel is largely restored and open to the public.

Further information on Tall Ships and other events may be had from the Hawaii Visitors' Bureau—923-1811.

MARITIME SIGHTS & SITES: *Falls of Clyde,* one of the first ships of the Matson Line, is berthed at Pier 5, Honolulu Harbor, and is open to the public daily from 10 AM until 11 PM. A typical Clydesider of the 1870s, successor to the great British tea clippers, she was built in Scotland in 1878 and served in a variety of trades, including conversion to an oil tanker, until 1958. Bought by the people of Hawaii by public subscription in 1963, she is in the process of extensive restoration which will bring her to her original trim as a full-rigged ship for world voyaging.

Representing a more recent era of sea histroy, the U.S. Navy's Pacific Submarine Museum at Pearl Harbor traces the development of undersea vessels from the *USS Holland,* the nation's first tentative experiment with submarines in the 19th century, to the nuclear subs of the moment. The museum is filled with submarine records and memorabilia, and its program includes films on submarine warfare and operations. Hours are 9:30 AM to 5:00 PM Wednesday through Sunday.



VICTORIA

FRIDAY, JUNE 16
The Japanese schoolships *Nippon Maru* and *Kaiwo Maru* arrive in Victoria for a five-day port visit, with vessels open to the public.

THURSDAY, JULY 20
A.S.T.A. Tall Ships Race vessels begin to arrive in Victoria Harbor after passing the finish line at the Strait of Juan de Fuca sea buoy.

FRIDAY THROUGH SUNDAY
Vessels are docked along the Ogden Point jetties and in James Bay at the foot of Government St. There will be regattas in the harbor during the weekend as well as vessels open to visits by the public.

MONDAY, JULY 24
The Tall Ships Cruise-in-Company to Vancouver begins at 6 AM and passes through the San Juan Islands. The map on page 51 indicates the Cruise-in-Company course.

ACTIVITIES:
Captain Cook's 1778 voyage of discovery to Vancouver Island and Nootka Sound will be celebrated throughout British Columbia this year, and cultural programs will include a conference on Cook and his era, open to the public, sponsored by Simon Fraser University; a major exhibit on Captain Cook and Nootka Sound at the Provincial Museum, Victoria; a special display at the University of British Columbia's Museum of Anthropology dealing with Cook and the Nootka culture of B.C.; a British Columbia Museum Train which will tour the Province with a special Nootka Sound exhibit coach; and a four-gallery exhibit on Cook's life and discoveries at the Vancouver Centennial Museum and Planetarium.

In Victoria, the visit of the Tall Ships will be accompanied by sports competitions among crews on Friday, Saturday and Sunday—pulling-boat races, sailing races, swimming competitions, soccer matches and a tug-of-war. The A.S.T.A. prize-giving ceremony will take place Sunday afternoon. On August 1, an International Naval Review of ships from as many as ten nations will pass off Royal Roads, and the Royal Roads Military College will be illuminated for the occasion.

Further information on Tall Ships and other events may be had from the Vancouver Visitors' Information Centre—682-2222, or from The Captain Cook Bicentennial Committee, 1117 Wharf St., Victoria, B.C. V8W 2Z2.

MARITIME SIGHTS & SITES: The Maritime Museum of British Columbia, located at 2830 Bastion Square in Victoria, traces the rich history of Pacific Northwest seafaring from Cook's era to the present, with special emphasis on the early decades of Northwest shipping and on Canadian shipping lines. Among its exhibits are an extensive collection of ship models, including models of Cook's ships, that trace the evolution of both sail and power vessels, as well as tools and artifacts from the 18th and 19th centuries. Hours are 10 AM to 4 PM throughout the year, 10 AM to 6 PM in Summer. The museum is open every day.

VANCOUVER

WEDNESDAY, JUNE 21
The Japanese schoolships *Nippon Maru* and *Kaiwo Maru* arrive in Vancouver for a week's port visit, with vessels open to the public.

MONDAY, JULY 24
The Tall Ships Pacific fleet arrives in English Bay during the early evening.

TUESDAY, JULY 25
Ships enter Vancouver during the late morning, Class A vessels docking at Ballantyne Pier and Class B vessels at floats in False Creek.

TUESDAY THROUGH SATURDAY
Vessels are docked in Vancouver and are open to port visits by the public.

SATURDAY, JULY 29
Class B vessels in a fleet of 50 or more yachts race from Vancouver to Seattle. Sponsored by the Royal Vancouver Y.C. and the Seattle Y.C., the race begins at 3 PM in English Bay.

SUNDAY, JULY 30
Ships leave the Vancouver waterfront beginning at 10 AM. The Parade of Sail to Seattle follows a course which takes the Tall Ships fleet, along with support and spectator vessels, down through Rosario Strait and Admiralty Inlet. The map on page 51 indicates the Parade of Sail course.

ACTIVITIES:
The Vancouver Captain Cook Sea Festival takes place this year from July 22 to July 29, and includes the visit of the Tall Ships to the city. Events and amusements include salmon barbecues, air shows, races among yachts and rowing boats, Theatre in the Park, more than 20 attractions each day along the Vancouver waterfront and elsewhere in town. The Tall Ships enter the harbor through Lion's Gate on the morning of July 25, and are followed by naval vessels from nearly a dozen nations in the afternoon. On July 30, the Sea Festival Grand Parade through Vancouver will feature sailors and cadets from Tall Ships and warships.

The Tall Ships depart on July 30, but all is not lost—the annual Nanaimo-to-Vancouver Bathtub Race, definitely the world's most eccentric yachting event, brings the competitive tubs to a finish at Kitsilano Beach at 11 AM. On July 30, the International Naval Review fleet leaves Vancouver for Victoria. And from August 19 to September 4, the annual Pacific National Exhibition, this year with a Captain Cook theme, brings the culture, agriculture and industry of British Columbia to a focus in its displays, and also entertains visitors with shows, rides and all the fun of Canada's second largest fair.

Further information on Tall Ships and other events may be had from the Vancouver Visitors' Information Centre—682-2222.

MARITIME SIGHTS & SITES: A division of the Centennial Museum of Vancouver, the Vancouver Maritime Museum at the North foot of Cypress St. is devoted to the sea history of the Canadian West Coast and includes the restored RCMP vessel *St. Roch.* The rugged 104' ketch-rigged patrol boat was the first ship to come through the Northwest Passage in both directions. Built in 1928 for Arctic service, she remained in commission until the 1950s. Hours are 10:00 AM to 5:30 PM daily, including holidays.

VANCOUVER
TO SEATTLE
VANCOUVER ISLAND
TO VANCOUVER
TO A.S.T.A.
TALL SHIPS RACE
STARTING LINE
VICTORIA
STRAIT OF JUAN DE FUCA
ROSARIO STRAIT
ADMIRALTY INLET
SEATTLE

SEATTLE

MONDAY, JULY 31
The Parade of Sail arrives in Seattle Harbor during the morning and vessels dock at piers along the waterfront.

MONDAY THROUGH FRIDAY
Vessels are docked on the Elliott Bay waterfront and are open to port visits by the public.

SATURDAY, AUGUST 5
A.S.T.A. Tall Ships Race vessels leave Seattle at noon, passing out the Strait of Juan de Fuca in a Cruise-in-Company with support and spectator vessels to the starting line of the race to San Francisco.

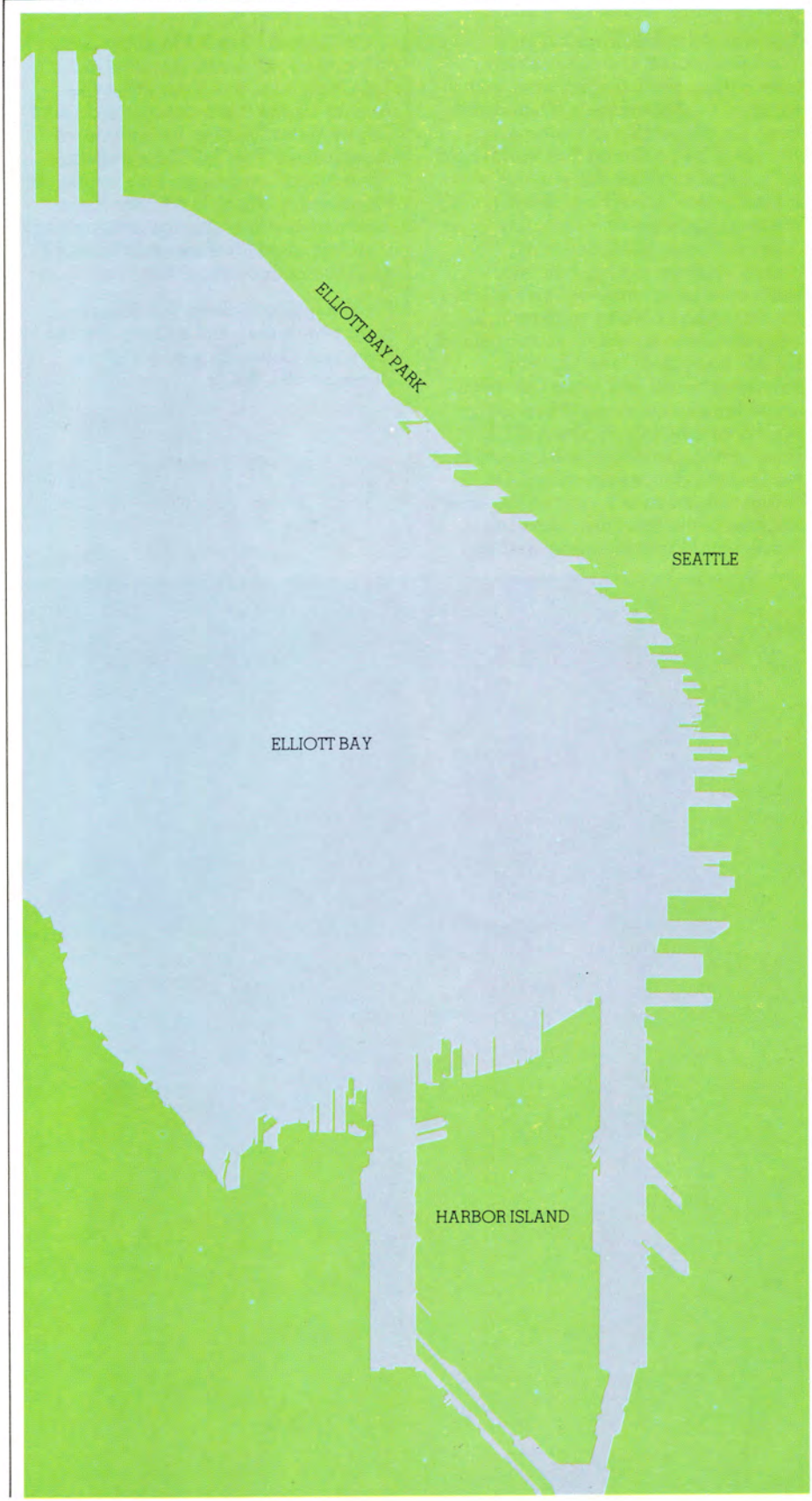
SUNDAY, AUGUST 6
The Tall Ships Race to San Francisco begins at Noon from a starting line at Swiftsure Bank.

ACTIVITIES:
Seattle's renowned Seafair, second only to the New Orleans Mardi Gras in size and activity among U.S. festivals, is the event surrounding the visit of the Tall Ships to Puget Sound. Seafair activities range from parades to ethnic festivals to boat races, and the arrival of the Tall Ships Pacific fleet will be preceded by an event unique to Seafair, indeed unique to anything—the annual Seafair/KVI International Milk Carton Boat Race, which will fill Green Lake with vessels of every description made from half-gallon milk cartons. The races go on all day, but early arrival is advised since milk-carton boats tend to self-destruct during the proceedings.

The next day more substantial vessels—the Tall Ships—arrive on the Elliott Bay waterfront, and crews are entertained in the evening with a reception for officers and a dance for cadets. During their August 1-4 visit, crews will tour Boeing's 747 and hydrofoil plants, the Metropolitan Museum of New York's King Tut exhibition at Flag Plaza Pavilion, the Washington State Dept. of Fisheries facility in Olympia, the Rainear Brewing Co. plant in Seattle, Simpson Timber Co. in Shelton, Longacres Racetrack and Mount Rainear. On August 2, several U.S. Navy ships join the Tall Ships in Elliott Bay, and in the evening at the King Dome the finals of the famous Seattle Tug of War, with more than 100 teams, will entertain thousands. On August 3, the Seafair Coronation Ball and Reception will be held in the evening at the Seattle Center Coliseum.

On August 4 in the evening, the Seafair Torchlight Parade will wind through the streets of downtown Seattle. On August 5, Neptune's Holiday, a marine carnival in Elliott Bay, will present boat parades, crew races, sailboat races that include a dinghy race with a LeMans running start, and a display of Puget Sound fishing vessels, antique yachts, and Seattle's fleet of steam launches, cruisers and small tugs. On August 6 the Seattle Seafair/Squire Shops Unlimited Hydroplane Regatta will roar through a course on Lake Washington at racing-car speeds.

Further information on Tall Ships and Seafair events may be had from Seafair Information—623-7100—on a 24-hour basis.



MARITIME SIGHTS & SITES: On the Kirkland waterfront of Lake Washington, at 218B Kirkland Ave., Northwest Seaport preserves three historic vessels—the 165' lumber and cod-fishing schooner *Wawona,* built for the California lumber trade in 1897, converted for fishing in 1913 and active in the Bering Sea until World War II; the 1889 Columbia River tug *Arthur Foss,* Tugboat Annie's home in the Marie Dressler movie; and the *Relief* lightship that served from 1904 to 1960 as a replacement station on the Columbia River bar and on California's Blunt's Reef. Northwest Seaport's exhibits also include ship models, nameboards, maritime artifacts and tools. A research library is part of Northwest Seaport. Summer hours are Noon to 5 PM Tuesday through Friday, Noon to 7 PM Saturday and Sunday.

Down the coast at Astoria, Oregon, more Northwest maritime lore is on display at the Columbia River Maritime Museum. The collection includes the lightship *Columbia,* which kept station on the hazardous Columbia River bar and elsewhere on the Northwest coast from 1909 to 1961, and there are models, photos, paintings and artifacts that represent the river's considerable history as a haven and a loading port for ships of the grain and lumber trade. There is also major emphasis on the sternwheelers and sidewheelers that crowded the Columbia as towboats and passenger vessels.

SAN FRANCISCO

FRIDAY, AUGUST 11
A.S.T.A. Tall Ships Race vessels begin to arrive in San Francisco Bay in late afternoon and early evening.

SATURDAY, AUGUST 12
Tall Ships and support vessels parade in the afternoon from the Fisherman's Wharf waterfront and around Treasure Island, past the Oakland waterfront to the San Rafael bridge, then back to Fisherman's Wharf by way of the Tiburon shore and the Golden Gate. The map on page 55 indicates the Parade of Sail course.

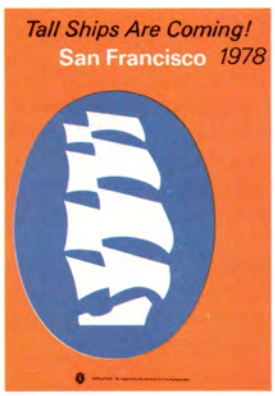
SATURDAY THROUGH MONDAY
Vessels are docked on the Fisherman's Wharf waterfront and are open to port visits by the public.

TUESDAY, AUGUST 15
The Tall Ships Race to Long Beach begins at Noon from a starting line at the San Francisco sea buoy.

ACTIVITIES:
The visit of the Tall Ships to San Francisco will be accompanied by events throughout the Bay area, with a focus on the Fisherman's Wharf waterfront. On August 12, following the Parade of Sail, a Grand Ball will be held at City Hall for ships' officers and invited guests, hosted by United Nationalities of the Bay Area. On August 13, competitions among cadets—soccer, pulling-boat races, sailboat races, rugby—will be held on the Fisherman's Wharf waterfront. In early afternoon a parade, accompanied by U.S. Navy and Coast Guard marching bands, will bring Tall Ships crews from Fisherman's Wharf to Fort Mason for a barbecue. The A.S.T.A Prize-giving Ceremony will be held at the Presidio Sunday afternoon. On August 14, crews will tour the Bay area courtesy of the San Francisco Convention and Visitors' Bureau and the San Francisco Chamber of Commerce.

On August 15 at 9 AM, ships depart in formation for the starting line of the Tall Ships Race down the coast. On August 16, the first races of four days of Regionals for Quarter-Ton yachts—a regatta titled "The Tall Ships and the Short Ships"—will begin on a course off Fisherman's Wharf. In addition to the maritime events of this special summer, mid-August will feature art exhibitions and theatre throughout San Francisco.

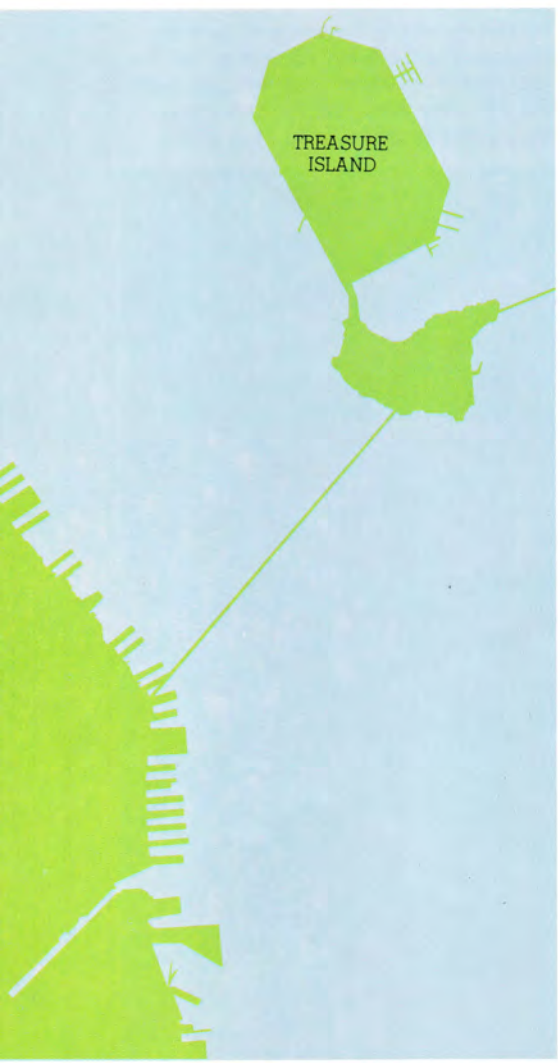
Further information on Tall Ships and other events may be had from the San Francisco Convention and Visitors' Bureau—391-2000.



MARITIME SIGHTS & SITES: One of the world's great maritime museums, the San Francisco Maritime Museum at the foot of Polk St. is an archive and an active heir of the considerable maritime history of the Bay. The collection includes, in addition to ship models, early photographs, paintings, portions of ships and other artifacts, some very rare restored vessels—the 1884 British merchant ship *Balclutha,* a Cape Horner that earned her commercial keep until 1933, and the paddlewheel tug *Eppleton Hall,* which is open to visitors and makes frequent voyages on San Francisco Bay as an active museum vessel.

The nearby San Francisco Maritime State Historic Park, at Hyde St. Pier on the Bay, preserves five vessels that remain from Bay service and Bay trades—*C. A. Thayer,* a lumber schooner that brought timber and other cargo down the coast until 1950; the typical S.F. Bay scow schooner *Alma; Wapama,* the last of hundreds of steam schooners that served the West Coast lumber trade; the steam tug *Hercules;* the paddlewheel ferry *Eureka,* with her walking-beam engine, once one of the many Bay ferries.

And in Monterey, at 550 Calle Principal, the Allen Knight Maritime Museum preserves ship models, scrimshaw items, navigational instruments, ships' artifacts, logbooks, photographs and prints and paintings of West Coast ships.



LONG BEACH

FRIDAY, AUGUST 18
A.S.T.A. Tall Ships Race vesels begin to arrive in the Port of Long Beach during the morning, docking at piers in the vicinity of the *Queen Mary*.

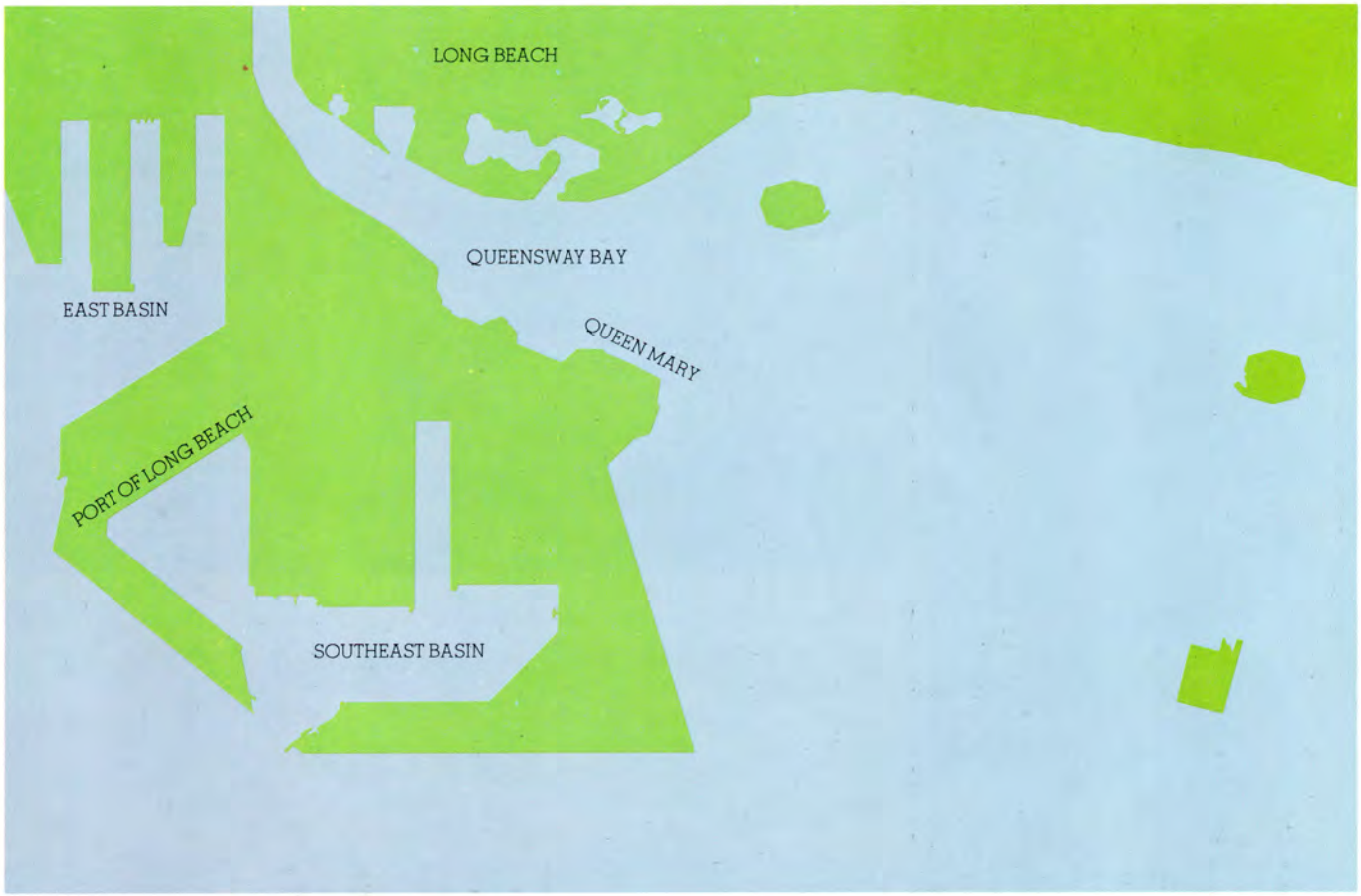
SATURDAY THROUGH MONDAY
Vessels are docked at Long Beach piers and are open to port visits by the public.

ACTIVITIES:
The 13th Annual Long Beach Sea Festival, with a dozen events each day, takes place this year from August 4 through 27. Among its major attractions are the National Dragboat Championships at Long Beach Marine Stadium, with qualifying runs August 4 and racing August 5 and 6; the annual Fishing Rodeo at Belmont Pier August 4 from 6:30 AM until Noon, open to children 16 or younger who recieve prizes from the Long Beach Tuna Club and Long Beach Recreation Department if they catch some significant fish; the Division II Hobie Cat 16 Nationals August 5 and 6, with boats launching from the foot of Laverne Avenue and racing at 11 AM; the Catalina Ski Race August 13, which takes skiers 26 miles to Catalina and back; the International Speed Ski Jamboree at Marine Stadium from Noon to 5 PM August 20; and the Ancient Mariner Regatta August 20 in Queensway Bay with 75 vintage yachts racing and crowds of spectators watching from Junipero Avenue Beach.

Further information on Tall Ships and Sea Festival events may be had from the Long Beach News Bureau—436-3645.

MARITIME SIGHTS & SITES: The renowned *Queen Mary* is the pride of the Long Beach waterfront, retired from more than 30 years of passenger service in the grand manner, and berthed at Pier J on Queensway Bay where visitors may come aboard to enjoy shops, restaurants, the Queen Mary Museum and Cousteau's Living Sea. The ship's history as the greatest of the Clydeside steamships, descendent of the iron and steel clippers and steam vessels which Scotland launched for nearly a century, is recalled in her own museum. Cousteau's Living Sea is a three-level exhibition devoted to life beneath the sea and to underwater exploration.

On the San Diego waterfront, at 1306 N. Harbor Dr., 90 miles south of Long Beach, is the superbly restored *Star of India* and two other vessels. *Star of India,* launched in 1863 as the bark *Euterpe,* sailed in a variety of Pacific trades and last served the Alaska Packers in the 1920s. Sharing the waterfront with her are the 1904 steam yacht *Medea,* one of the last of a type that represented the acme of yachting elegance in the Edwardian era, and the San Francisco Ferry *Berkeley,* pride of the S.F. ferry fleet until the less-interesting Bay Bridge took her job away.



ROLEX

Of Time, Tall Ships and Timeless Excellence

Youth and a blue-water contest. A square-rigged tribute to Captain Cook's Bicentenary. This is "Tall Ships Pacific '78." Fit watchmates are these Rolex Oysters. From top: the Lady-Datejust in 18kt. gold with matching President bracelet, self-winding chronometer, pressure-proof to 165 feet; the Submariner-Date in 18kt. gold with matching bracelet, self-winding chronometer, pressure-proof to 660 feet; the Lady-Date in steel and gold with matching Jubilee bracelet, self-winding and pressure-proof to 165 feet. For free color brochure: Rolex Watch U.S.A., Inc., Rolex Bldg., 665 Fifth Ave., New York, 10022; Rolex Watch Co. of Canada Ltd., 80 Richmond St. West, Toronto M5H2B8.

STAR OF INDIA

THE HERITAGE OF TALL SHIPS IN THE PACIFIC

BY PETER STANFORD

The Pacific Coast, nursery of some of the finest achievements in American seafaring, is no playpen. "Many extreme gusts," alternating with "thick and stinking fog," were reported by Francis Drake, closing with the Coast in 1579. Captain Cook, in his voyage halfway between Drake's time and ours, had little better to report. Rain squalls shut out the entrance to the Straits of Juan de Fuca behind the headland Cook named Cape Flattery, and seeing no shelter for his sea-hounded ships he drove on to open what became a lucrative fur trade with the Indians on Nootka Sound, on the west coast of Vancouver Island in Canada.

Both men came to the Coast seeking a backdoor to the fabled Northwest Passage—an imagined seaway that Europeans felt had to exist through North America. Such a seaway would offer an easier transit from the Atlantic world to the Pacific than the long and dangerous journey all the way south around Cape Horn at the tip of South America.

But there was no easy way. The whole development of our Pacific seafaring, and the establishment of our great West Coast cities, depended on that hard sea road around Cape Horn.

Drake's voyage was made a generation before the first English settlers landed on the Atlantic Coast. By the time of Cook's voyage two centuries later those settlers were in revolt against the English Crown. Within weeks of the last British soldier's departure from New York, a ship from that port was sent to China. She was followed by Boston ships that stopped off first to pick up furs at Nootka Sound and elsewhere on the "northwest" coast, taking them on to China to trade for silks, fine porcelains and tea prized at home, which they reached by sailing on around the world.

Star of India evokes California's maritime past on the San Diego waterfront.

In 1792 Captain Robert Gray of Boston, ranging the coast in his *Columbia* in this trade, found the great river he named after his ship, so opening a broad avenue reaching into the interior of the Pacific Northwest. A fishing and fur trading station, supported by ships coming round Cape Horn, was flourishing there by the time Lewis and Clark stumbled in after their exhausting trek westward in 1805.

From such bold beginnings, East Coast Americans poked the noses of their small, bluff-bowed ships into all corners of the Pacific world, catching whales, slaughtering seals and salmon, trading with South Sea islanders and Russian settlers in Kamchatka and Alaska. Honolulu in the Hawaiian Islands, which Cook had discovered, became an entrepot and way-station for these thriving seaborne trades.

Meanwhile the long reaches of the Pacific Coast slumbered on, visited only by fur traders—"Northwestmen"—and by Yankee ships picking up hides for Massachusetts' shoe factories. The hides were loaded from cattle ranches in San Francisco Bay or in exposed anchorages south along the coast of California. A young Harvard man, Richard Henry Dana, Jr., recorded the loneliness of a voyage in this latter trade on a desolate and dangerous coast in the 1830s, in his classic *Two Years Before the Mast.* But slowly, Coast settlements built up. California came under the American flag following the Mexican War of 1846 and then, in December 1848, President Polk announced the discovery of gold in the hinterland of San Francisco.

It was as though a long-awaited signal had been given. East Coast Americans crowded into everything that could float to make the long journey round Cape Horn to Frisco. From April of 1847 to April of 1848, eight ships had cleared East Coast ports for San Francisco. Seven hundred and seventy-seven cleared the following year. This bent the lines of force in ocean commerce, and in 1850 two famous China clippers were diverted from their regular runs from New York to go to California—one of them, the delicate *Sea Witch,* becoming the first ship in history to make the passage in under 100 days. In the following year the immortal *Flying Cloud,* one of the new generation of California clippers, burst through in just under 90 days—a record equaled only two more times, once again by the *Cloud* herself.

Overnight the sleepy Mexican village of San Francisco became a world seaport, built in part on the hulks of ships whose crews had quit them for the gold fields. "A Venice of pinewood," it was called, "a city ruled by tides." From this point there was no looking back, and a vigorous West Coast navigation came into being. Great ships sailed with cargoes of lumber from Seattle and Portland, and grain from San Francisco and later the Northwest. America's whaling, long run from New Bedford, came to center on San Francisco. Schooners traded to the South Seas, and, to load lumber and railroad ties, scores of "outside-porters" nipped in and out of doghole ports along the rocky northern shore. Los Angeles (San Pedro) and San Diego became major ports when a real estate boom occured in the 'eighties. The Puget Sound three-masters delivered their cargoes over exposed southern beaches to build the new towns and expand old cities.

During the closing decades of the nineteenth century, the grain trade from San Francisco to Europe was the principal West-Coast commerce for deepwater sailing vessels.

The shipbuilders of New England, launching "Down Easters" of oak and hard pine, and the shipbuilders of Glasgow, constructing handsome full-riggers and four-masted barks of iron and steel, dedicated the best of their product to the fledgling city on the far side of the world and the golden harvest of its hinterland.

The numerousness of the grain fleet is best conveyed in a single figure—559 sailing ships departing the Golden Gate with a single season's harvest, that of 1881. The vessels in this fleet were probably, on the average, four or five times the capacity of the vessels that had come 'round the Horn for the Gold Rush a generation before. Moreover, they needed full crews to get them away as soon as laden, and San Francisco's notorious "shanghai" activity and boisterous waterfront was at its height during these years.

An inscription lettered large on a wall of the Maritime Museum pays tribute to these vessels:

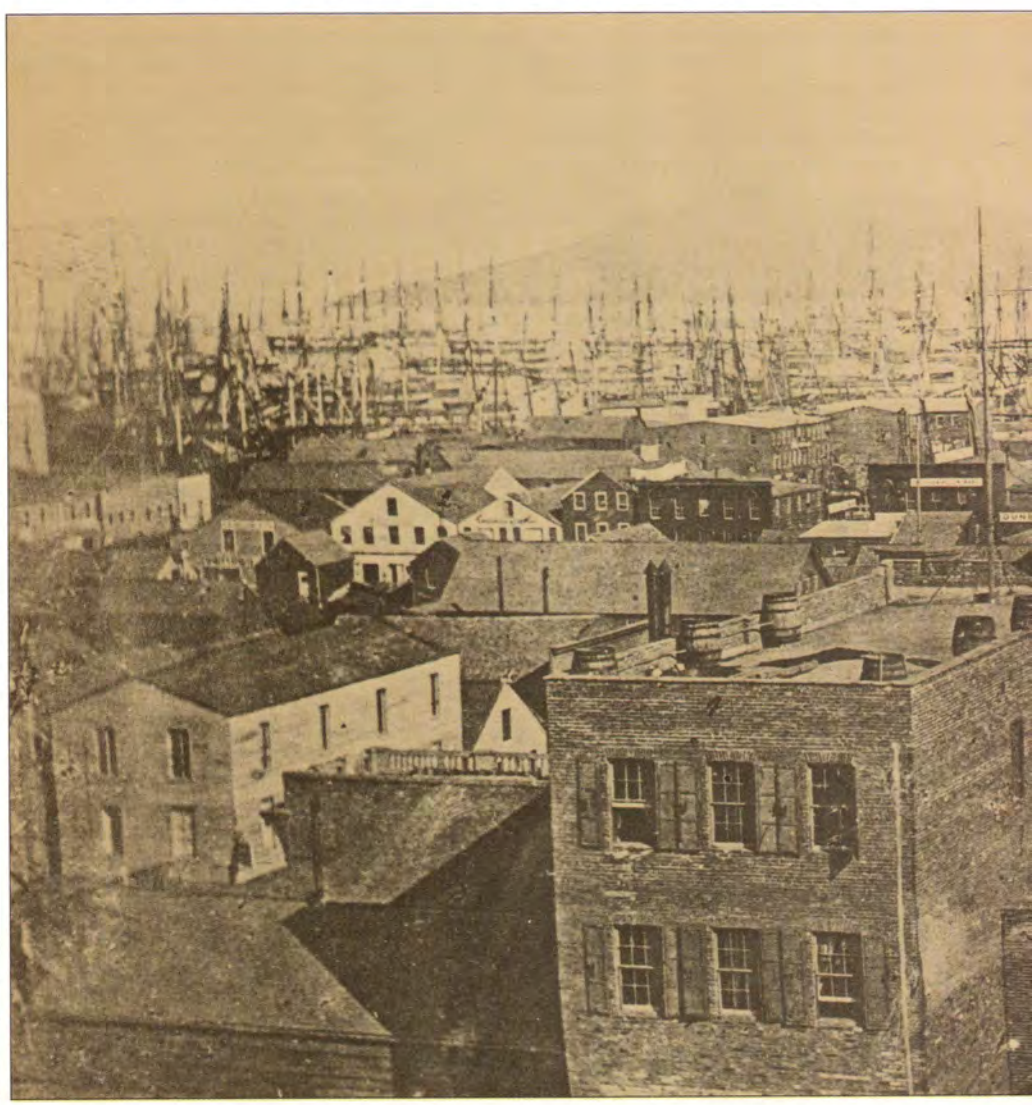
> *". . . South to the blind Horn's hate"*
> *THE CAPE HORNERS*
>
> *San Joaquin valley in the '70s, '80s and '90s was bread basket to North Europe.*
>
> *No fewer than 559 sailing ships assembled at San Francisco to load a single season's grain harvest—that of 1881.*
>
> *Each ship in this vast fleet had to round dim, storm-wracked Cape Horn, the extremity of South America, to reach her destination.*
>
> *Taking guidance from the sun, seizing power from the winds, kept on course by the sinews of men, the heavy-laden ships set sail off the Golden Gate for their trial at the bottom of the world.*

As late as 1899 the last sailing passenger packet *Kaiulani* was built in Maine for the San Francisco-Hawaii run, and about the same time, according to maritime historian John Lyman, "practically every square-rigger left under American registry was owned on the Pacific Coast, being operated either in the lumber trade, the North Pacific whale fishery, the Hawaii sugar trade, or the Alaska salmon industry." The fabled square-riggers of New England now had West Coast hailing ports lettered on their transoms.

The last square-rigger to go north under sail in the salmon cannery trade was *Star of Alaska (Balclutha)* in 1929. The famous "Star" fleet operated in numbers throughout the 1920s.

As the great days of seafaring in tall ships receded into the past, leaving behind the names of famous ships and clipper captains, tales of Cape Horn grain races, flying fish and sounding whales, of the hard voyaging of outside-port schooners and the enterprise of the Southseamen, beginnings were made to save something of this vast and challenging heritage of man.

Inspired by newspaper headlines reporting that the famous wooden down-Easter *Benjamin F. Packard,* sent to New York to become a barge, had been saved as a museum ship, a group of enthusiasts brought the iron square rigger *Star of India* of 1863 into San



Diego in 1927, under the aegis of the San Diego Zoo. Three years later, the wooden down-Easter *St. Paul* was presented to the Puget Sound Academy of Science and put on exhibition in Seattle. But as the 1930s ended, it was clear that these efforts were not working. The reason was poor displays once the public was aboard, and primitive interpretation of the rich history of these vessels. They were essentially "empty ships" to the disappointed visitor.

Packard was towed to sea and sunk in hopelessly deteriorated condition. *St. Paul* served for a while as a breakwater on Vancouver Island before breaking to pieces in the winter gales striking up the straits of Georgia. *Star of India* was saved from a like fate only by her stout iron hide. During World War II her masts were cut down, and she was rescued from the boneyard only by the timely report (made by Captain A. C. Wilvers who once commanded the four-masted bark *Muscoota*) that she wasn't really worth the trouble to scrap.

Above, San Francisco's replica Italian fishing boat. Below, San Francisco during the Gold Rush.

Revival began in 1951 with the opening of the new San Francisco Maritime Museum, which has since become a world center for preserving maritime heritage. Inspired by the example of Mystic Seaport in Connecticut, which in 1941 had saved the 100-year-old whaler *Charles W. Morgan,* the San Francisco museum stalwarts acquired the Cape Horner *Balclutha,* a steel square-rigger of 1886. Her restoration became a community effort, sparking new interest in the revival of the North Shore waterfront. Her story and the story of the world she sailed in was presented with utmost authenticity in on-board exhibits done by the museum's founding director, Karl Kortum, who had sailed the last voyage of *Kaiulani* in 1941-42, and who as a boy had dreamed tall dreams aboard the old square-riggers rotting in odd corners of the harbor. This tall ship was joined by the steam schooner *Wapama,* sole survivor of the era of Cappy Ricks, the big sailing schooner *C. A. Thayer,* the scow schooner *Alma,* and the steam ferry *Eureka,* under a State Parks program that the museum initiated.

In 1970 the paddlewheel tug *Eppleton Hall* joined the fleet, steaming in all the way from England (through the Panama Canal, not round the Horn!) under the command of the museum's founding trustee Scott Newhall. It was an epic voyage worthy of the argonauts of old. The whole fleet, since augmented by a second steam tug, *Hercules,* has now come under the protection of the National Parks Service, thanks to Congressman Phillip Burton's pioneering legislation, which also saved for San Francisco and the world the foreshore and uplands around the Golden Gate.

Success in San Francisco brought new help to the fading *Star of India* in San Diego in the late 1950s. The well-known maritime historian Jerry MacMullen, who had sparked saving the ship, stood by her through three lean decades and now saw her conveyed to a newly formed San Diego Maritime Museum Association. Captain Kenneth D. Rey-

nard embarked upon a thoroughgoing restoration, eschewing the half-baked showmanship approach which had almost killed the vessel, and on Independence Day, 1976, in her 113th year, he took her to sea under full sail. With the *Star* today lie the great steam ferry *Berkeley,* housing in its immaculate spaces the makings of a major maritime museum exhibit, and the steam yacht *Medea.*

In Seattle, the lumber schooner *Wawona* has survived difficult days to become the central exhibit of Northwest Seaport, and has been joined by the tug *Arthur Foss* and a steam-powered lightship. The San Francisco ferry *San Mateo* is separately maintained on the waterfront.

A fourth major maritime center has come into being at Astoria in Oregon, where the Columbia River Maritime Museum maintains a major collection including a lightship that served at the mouth of the river where it breaks through a forbidding coast.

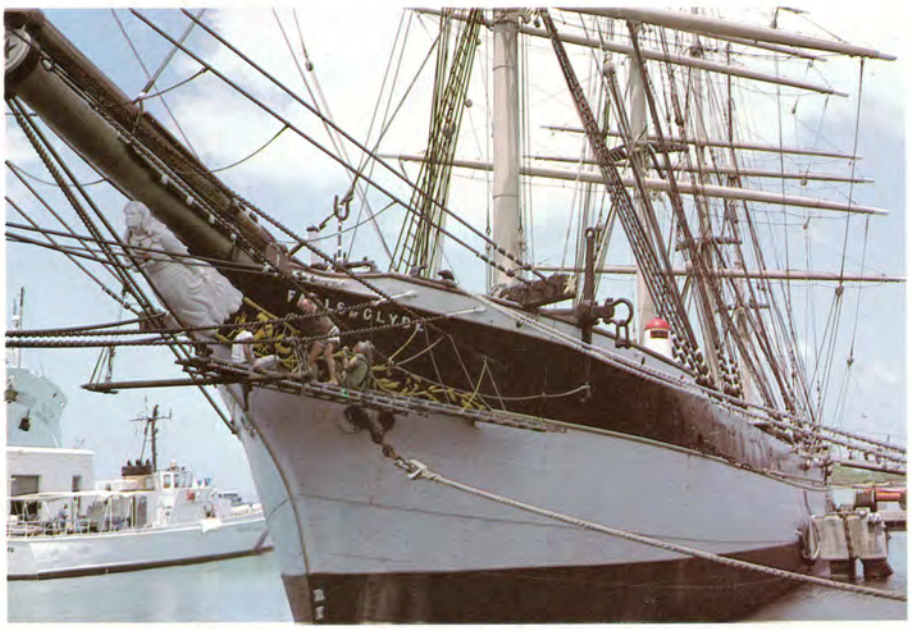
In British Columbia, maritime museums flourish in Vancouver and Victoria, the former collection including the restored R.C.M.P. vessel *St. Roch,* a tough old veteran of decades in the Arctic.

And in Hawaii, the famous four-masted ship *Falls of Clyde* of 1876 is now open to the public in Honolulu as part of the Bernice P. Bishop Museum. She was saved in 1963 by four years of intensive West-Coast efforts mounted from 1959 onward by Karl Kortum, Capt. Fred Klebingat, and Bob Wienstein, and in the end the "Paul Revere" work of historian John Wright in the Islands.

The focal point of these efforts, and fulcrum of the historic ships movement, has been the San Francisco Maritime Museum. Their role has been critical in the saving of the square riggers *Polly Woodside* in Melbourne and *James*

At top, Vancouver's *St. Roch;* above, *Balclutha* comes to her berth at Fisherman's Wharf; at right, before the mast aboard *Balclutha,* sea chests and all.

Preserving our maritime heritage is no more or less than people excited by ships and the sea . . .



Craig in Sydney, Australia; *Elissa* in Greece, now refitting for Galveston, Texas; *Wavertree* in New York, and Brunel's great iron steamer *Great Britain* in Bristol, England. The leading tenet of the San Francisco school has been set forth by Karl Kortum, its master, in these words:

At top, the heroic *Eppleton Hall*; above, Honolulu's restored *Falls of Clyde*.

"A ship properly invested as a museum or set up as a display sends out emanations of lore, humanity, history, adventure, art, literature. . . ."

Properly invested—much learning and caring and skilled creation of onboard exhibits goes into that concept, and it is one paid back in the inspiration and sea-education people find when they visit these ships today.

What is the future of this work? It lies in the young people sailing the scow schooner *Alma* on the routes she traveled carrying hay around San Francisco Bay and up its rivers, mastering the obdurate machinery of the paddlewheeler *Eppleton Hall* to carry a museum message on the waters, rigging and rerigging, building and rebuilding the ships of our seafaring so that the learning of a proud heritage will not be lost to man.

Through initiatives launched in San Francisco fifteen years ago, the National Maritime Historical Society was formed to safeguard and advance that heritage. Its Ship Trust Committee works today to return the last surviving ship of the California Gold Rush to San Francisco, and to keep alive the arts of shipwright and sailor. By such efforts, the Tall Ships in their ocean voyaging from Honolulu to Vancouver, and on to Seattle, San Francisco and Long Beach, under the sponsorship of the American Sail Training Association, sail in a living heritage whose challenge and hard-won learning the American public can share.

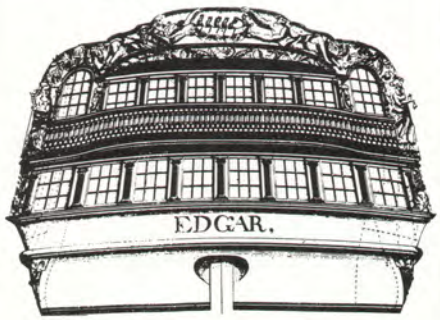
Tall Ships Pacific 1978 is a spectacular part of that sharing, and we welcome it as a reminder of the Pacific's maritime heritage and as a continuation of the ancient traditions of seafaring under sail. The museums and their programs are an equal part of that sharing, and we recommend to the hundreds of thousands who are inspired by the sight of Tall Ships in their harbors this summer that they visit, absorb and perhaps become active in maritime museum programs. Preserving our maritime heritage is no more or less than people excited by ships and the sea, and excited enough to insure that the ships, artifacts and skills of a glorious tradition live on not in museums but in their own lives.

Peter Stanford is President of the National Maritime Historical Society, 2 Fulton St., Brooklyn, N.Y. 11201.

SHIPS FROM THREE CENTURIES

BY MICHAEL LEVITT

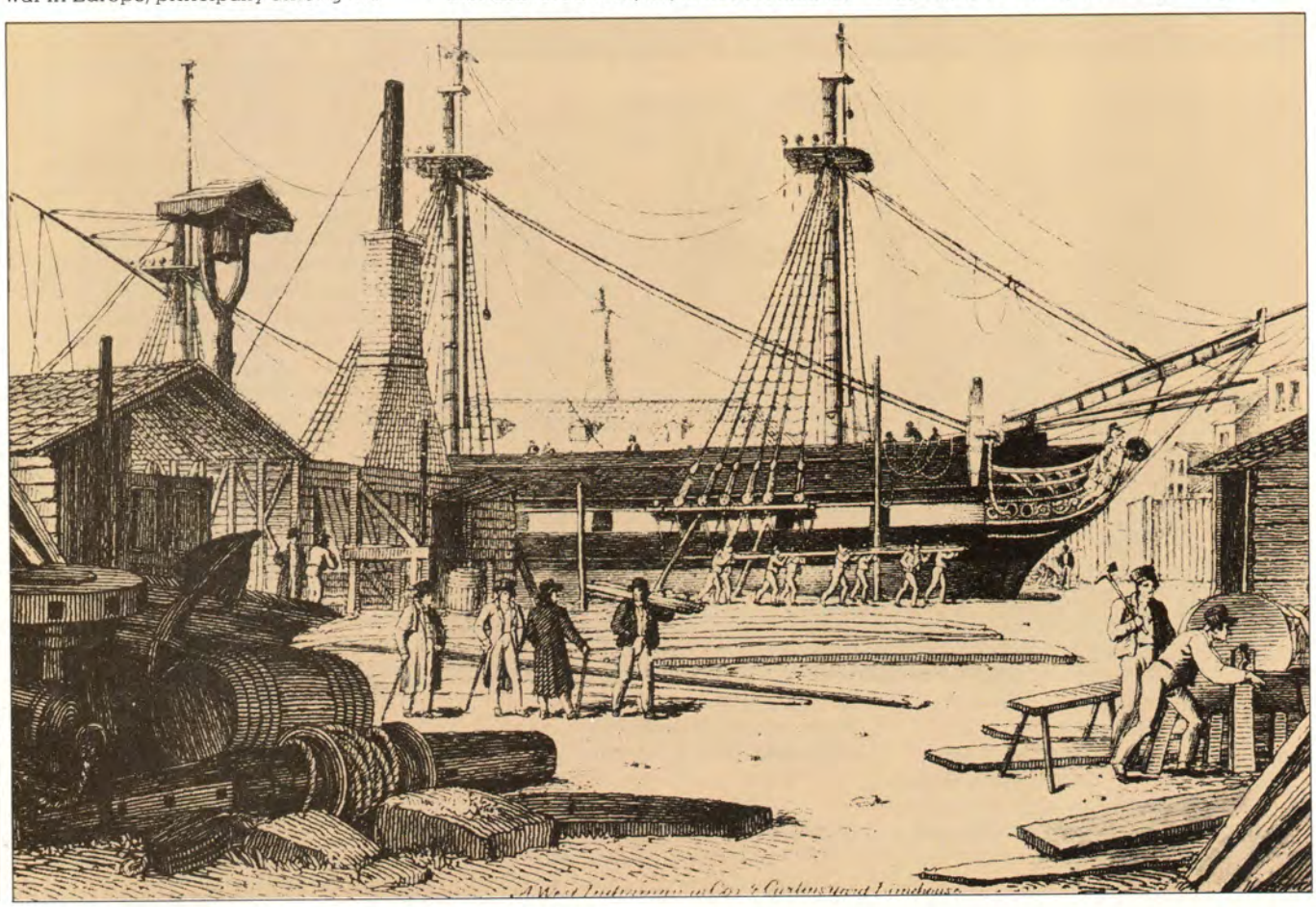
The world opened up to Europe in the 15th and 16th centuries, as Columbus reached the Americas, a sea route to India and China was established, and Magellan and Drake circumnavigated the globe. A world's worth of riches opened up like a strongbox and three great East India companies were chartered in the 17th century: British in 1600, Dutch in 1602 and French in 1664. Blessed with government-granted monopolies, the trading companies moved aggressively into the several new worlds, exploited new foreign markets as their fleets and ambitions grew larger, and fought with one another from the English Channel to the Indian Ocean. Competition for the riches of the Americas and the Far East generated more than two centuries of war in Europe, principally among the



sea powers of England, Holland, France and Spain.

The large merchant ship of the 18th century, developed during the 1600s for the Far East trade and known as an "East Indiaman," was a plump cargo carrier that delivered lead, tin, tools and cloth to the other side of the world and brought silk, spices and tea to the warehouses of Europe. The typical East Indiaman had three masts with square sails on the first two—a rig most effective when running with the wind, the orientation maintained as much as possible on sea routes that made use of winds blowing with virtually constant force and direction for thousands of miles—the aptly-named Trade Winds. The rear mast, known as the mizzen, had another square sail on top and a gaff-supported sail running fore-and-aft beneath it.

The East India ship's hull had a beaklike bow with a decorous figurehead. Thrusting out above the figurehead was a long wooden bowsprit with a perpendicular boom that supported another square sail that nearly hung in the water. In later versions, triangular



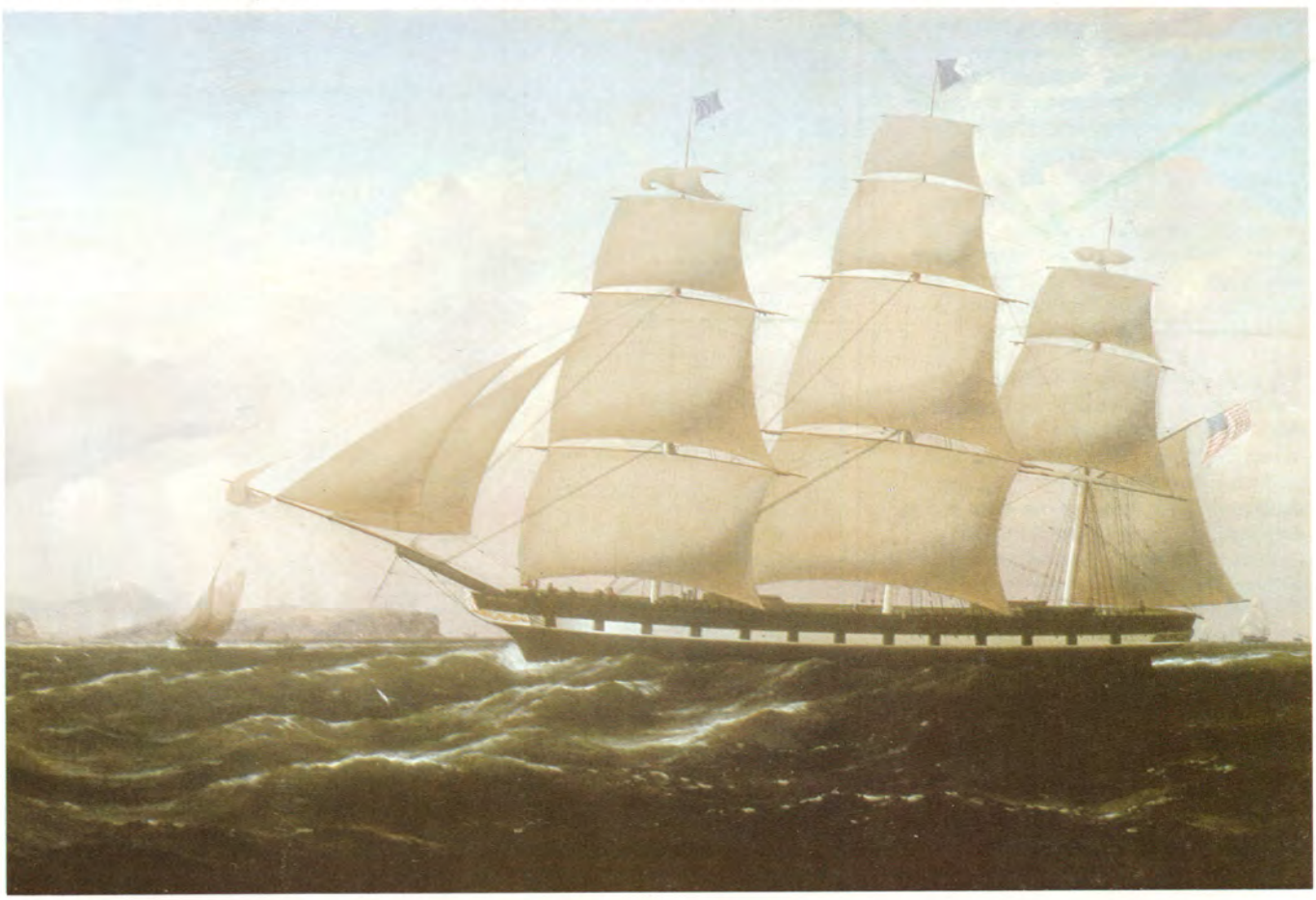
sails, looking not unlike the modern jib, were set above the bowsprit to help the ponderous ship go upwind, a thing it never did with much efficiency.

Categorizing sailing ships is a tricky business because types of ships were described by the shape of the hull until well into the 18th century, largely by the style of their rig in the 19th century, and in both cases with some exceptions. The typical British East Indiaman had a frigate-type hull similar to the hulls of Royal Navy warships. Except for a flatter bottom and lighter guns, an East India ship of the late 1700s was similar in appearance to a 64-gun naval vessel, and was rigged in the three-masted style known as "ship-rigged."

The bulky East Indiaman featured an ornate square stern, often with three decks, where ship's officers and occasional passengers lived in relative splendor. The crowd of crewmen lived forward (hence the term "before the mast") in cramped and unventilated quarters where the motion of the ship was the most severe. Large numbers of crew were necessary in these ships to work aloft setting and striking the cranky square sails. Large crews were also needed because death was no stranger aboard such ships: food, especially in British vessels, was poor and meagre; scurvy was a health hazard that might kill half the men aboard; and the unpredictable duration of voyages halfway around the world meant that food and water often ran short.

East India ships had rounded sides—often described as "apple-cheeked"—to increase load capacity. By 1730, Britain's blue-water ships averaged 500 tons burden (i.e.: with a full cargo); they grew to 750 tons by 1775 and 1200 tons by the end of the century. No other European nation could match the size of England's ships in the 18th century, and this was yet another reason why Brittania ruled the waves. Fat, heavily-burdened ships are never fast; they push tons of water aside as they move, and an East Indiaman traveled very slowly. It often took more than a year to make the round trip between England and China, counting time in port and the

Below left, an ornate West India ship is refitted in a London dockyard. Below, the New York packet *New World*, an early packet similar to a West Indiaman.



The packet trade was an American innovation, the first of many maritime strides which would challenge Europe for nearly fifty years.

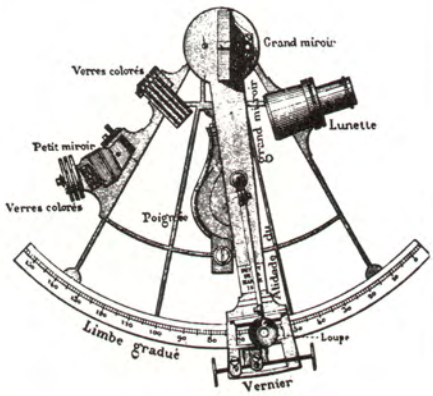
wait for favorable winds. The East Indiaman was the original slow boat to China.

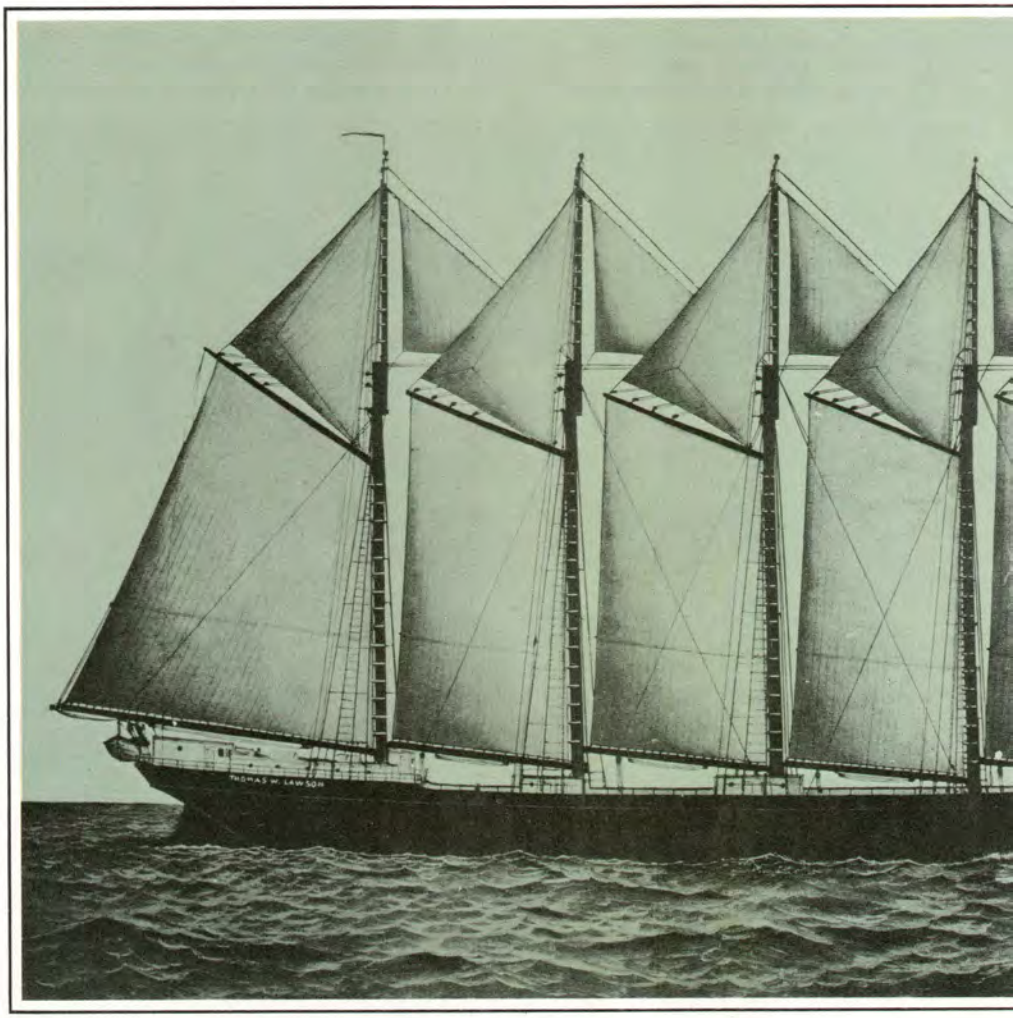
Throughout the 18th century there was little incentive to improve the speed or the sail-handling efficiency of the big merchant ships, although their warship sisters improved somewhat in speed and agility. To the East India companies, it was not how fast a cargo ship sailed but how cheaply. These ships were sailed conservatively; in fact, at night, no matter how easy the weather, all fair-weather sails were struck.

The most obvious feature of the East Indiaman was its imposing appearance—bulky in rig and hull and often with ornate carvings at bow and stern that were worthy of the King's own yacht. The trading companies were very rich, and their vessels were decorated and furnished in appropriate style. The British East India Company didn't own its ships, but chartered them from shipowners and shipbuilders from the day they were launched until they were no longer seaworthy, an arrangement typical in shipping even today. The Company did insist that such ships be built to its own designs and specifications, and East India vessels tended to be overbuilt and thus long-lived. There was much standardization of masts, rigging and sails, so that they were interchangeable from one ship to the next.

British merchants also commissioned a smaller ship for trade to the West Indies. Called, oddly enough, a "West Indiaman," it had only two decks and was normally about half the size of its bigger sister. Many of the West Indies ships were rigged as brigs or brigantines. The brigantine had two masts with a fore-and-aft mainsail on the rear stick, while the brig had two tall masts and a shorter one aft, called a trymast, which set a fore-and-aft sail. Other small ships of the 18th century included the "cats," small merchant vessels of northern Europe which were also generally half the size of a big East India ship and were rigged as barks, brigantines, brigs and sometimes topsail schooners—handy arrangements of sails that could maneuver a ship in close quarters and required relatively few men to handle. Captain Cook's ships were cats developed for the coal trade, small vessels capable of carrying a lot of cargo for their size and very nimble compared with big merchant vessels or warships.

Three technical innovations during the 18th century vastly improved the safety and health of seafarers, even as the ships they sailed remained much the same as those of their grandfathers. One was the octant invented by John Hadley in 1731. The octant—predecessor to the modern sextant—used mirrors for the first time and made possible the simultaneous observation of the sun and the horizon—no mean



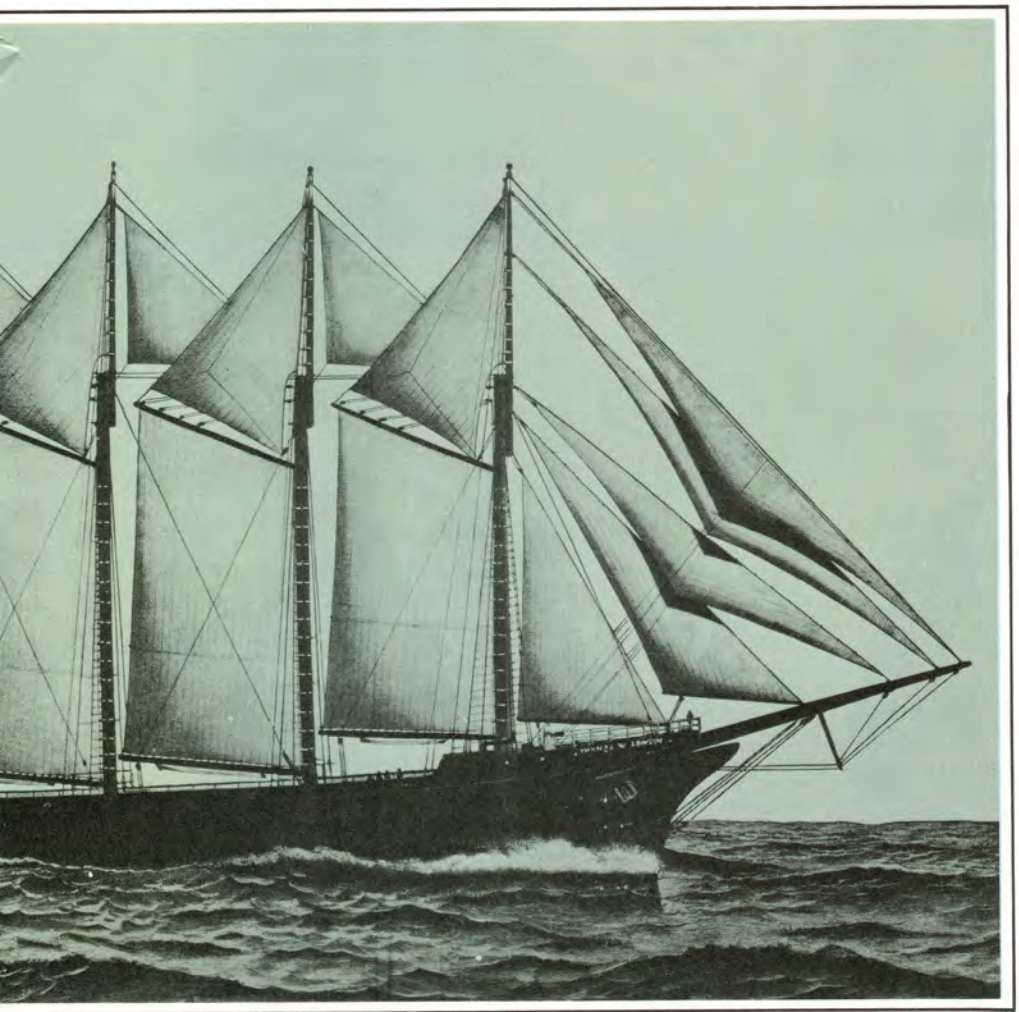


feat from the deck of a heaving ship. This refinement permitted the navigator to fix the ship's latitude—its North-South position on the earth—with greater accuracy than ever before.

Then, in 1735, John Harrison, responding to the offer of a £20,000 prize by the British government, made an accurate timepiece which, when combined with the Nautical Almanac's plots of the movements of stars and planets, allowed the navigator to pinpoint longitude, the ship's East-West position on the earth. Harrison devoted his life to building chronometers, and Captain Cook used the Harrison timepiece to find his way around in the vastness of the Pacific during his last two voyages.

Captain Cook was responsible for the third innovation—a cure for scurvy, the vitamin deficiency that killed more seamen on long voyages than gales and shipwrecks combined. Cook did not discover a cure—Captain John Smith had known in 1625 that "the juyce of Limons" would help prevent scurvy—but Cook cared enough for the health of his men to bring centuries of "anti-scorbutic" knowledge, plus some experiments of his own, to bear upon the problem. From Cook's day forward, scurvy began to disappear from the distance-voyaging ships of the world, and British Navy seamen and officers, ordered to swallow a daily dose of lime juice beginning in 1798, became known as "limeys."

The coasting schooner *Thomas W. Lawson*, below, was the most extreme development of the schooner's fore-and-aft rig.



While the fat, well-armed ships of Europe were busy with a booming world trade during the 18th century, American ships developed their own modest trade up and down the Atlantic Coast of the U.S. and to and from the West Indies. They also developed their own type of little ship which was faster and handier than the merchant vessels and battlewagons of Europe, characteristics which would very quickly bring Yankee ships to dominance at sea during the first half of the 19th century.

The defeat of Napoleon at Waterloo in 1815 brought peace to most of the world's oceans and brought a new shipping trade to the North Atlantic in the form of packet ships which carried an increasing load of immigrants and cargo between the ports of the New World and the Old. Packets were distinguished from other merchant ships by the fact that they left port on schedules as regularly as trains, a thing which had never been attempted before. The packet trade was an American innovation, the first of many maritime strides which would challenge the trade monopolies and slow vessels of Europe for nearly fifty years.

In the beginning of the trade, from 1818 to the middle 1820s, most packets were fat merchant vessels of the 18th-century type. With increasing trade and competition, however, a distinctive new type began to be launched from U.S. shipyards—a fine-lined, sturdy ship with two decks and a cloud of sail. The after portion of the upper deck aboard the later packets was reserved for passengers and ship's officers, who crossed the Atlantic not simply in comfort but in splendor. Lower-deck space was given over to crowds of immigrants seeking the streets that were lined with gold, many of them our great-great grandparents. Business was good, and packet

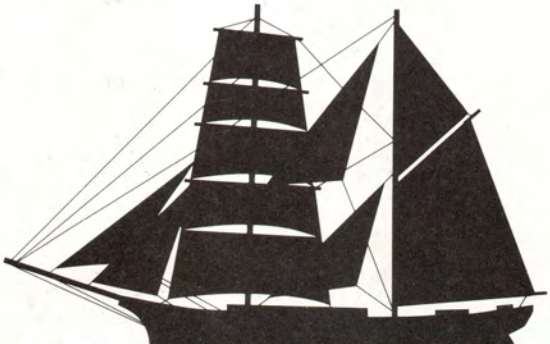
THE RIGS OF SAILING VESSELS

SHIP

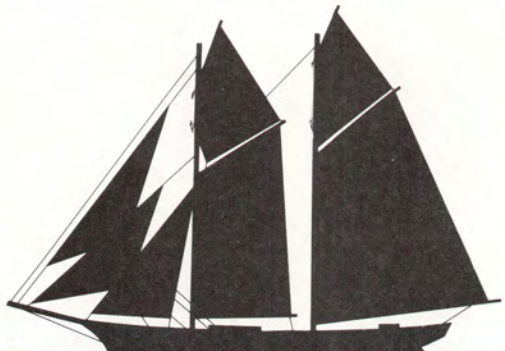
BARK

BARKENTINE

BRIG



BRIGANTINE



SCHOONER

Clipper-ship sailing records established in the 1850s still stand today, and the Yankee clippers were not only the fastest but the most beautiful of ships.

ships grew from 100' long and 350 tons burden in the beginning to 166' and 1000 tons by 1840.

It was a trade dominated from the beginning by U.S. vessels, which could deliver light cargo and passengers faster than anything afloat. Packet captains left port on schedule and tried to make port on schedule as well. Rivalry between ships and shipping companies escalated the schedules throughout the first half of the 19th century. The passage from Liverpool to New York was normally made in five or six weeks and the return trip, owing to prevailing winds from the west, took as few as three weeks. The quickest packets could run from Boston to Liverpool in as little as 13 days.

Packets were not kept until they became tired and useless, but were sold after five or six years and replaced with faster and more elegant vessels as each shipping company strove to keep ahead of its competition. Many "used" packets were bought by thrifty Yankees and converted to whaling vessels as the whale fishery grew during the first half of the last century and was soon dominated as well by U.S. ships and seamen.

The American genius for speed under sail, developed in the 18th century by colonial shippers whose only protection against pirates and the firepower of European ships was an ability to outrun them, began to be seen in quick little coasting schooners, then in the succession of fast packets, and finally in the ships we know as clippers.

Throughout the 18th century, American shipbuilders favored small two-masted ships called schooners which set fore-and-aft sails instead of square sails. Although the schooner rig can be traced back to Dutch and Scandinavian vessels of the 17th century, Americans perfected it and made it their own. Colonial schooners were used to carry goods up and down the Atlantic coast of the U.S., to the West Indies and to Europe. George Washington owned a schooner

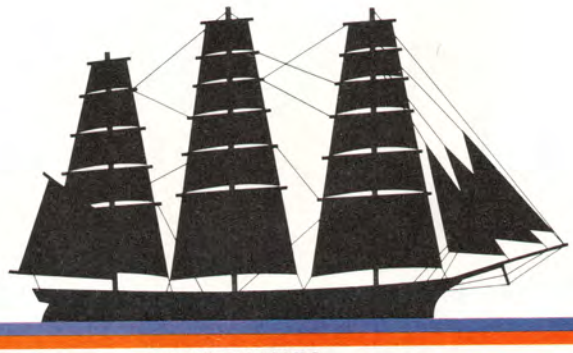
In fair, breezy weather, clipper ships set as many sails as possible—combinations of the sails shown at right depending on course and wind direction.

VARIATIONS IN CLIPPER-SHIP SAILS

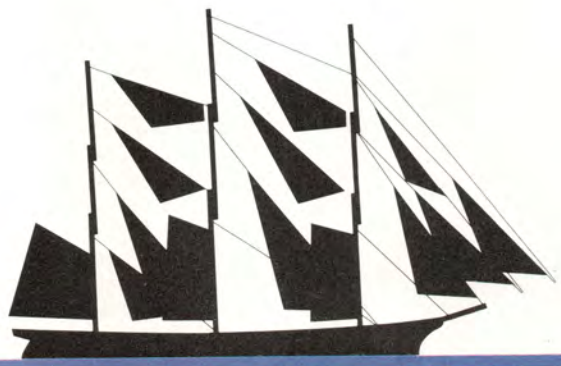
SINGLE OR PATENT-REEFING TOPSAILS;
SINGLE TOPGALLANTS, OPTIONAL ROYALS;
SHIP RIG WITH SQUARE SAILS ON MIZZENMAST

DOUBLE TOPSAILS ON FORE,
MAIN AND MIZZEN; SINGLE TOPGALLANTS,
ROYALS ON MAINMAST

DOUBLE TOPSAILS;
SINGLE TOPGALLANTS, ROYALS AND SKYSAILS;
MOONRAKERS OPTIONAL

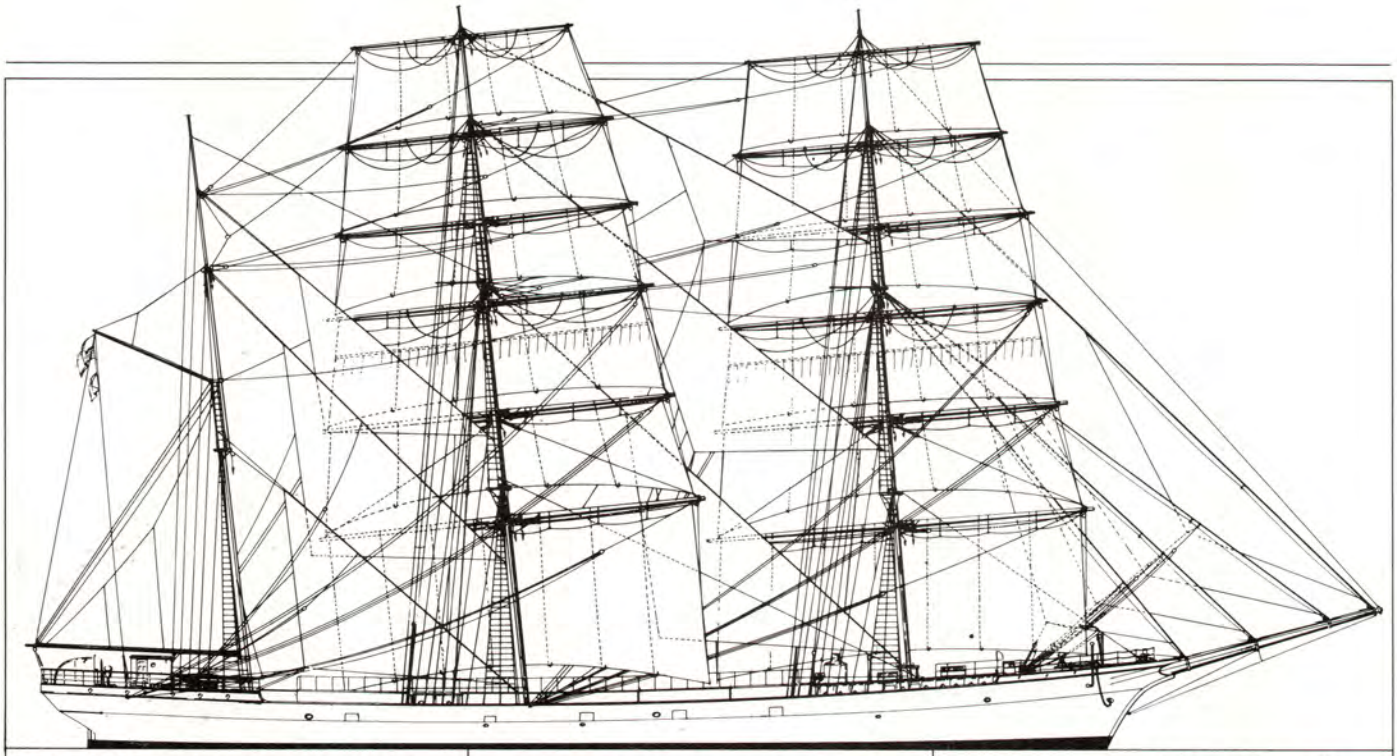


DOUBLE TOPSAILS;
DOUBLE TOPGALLANTS ON FOREMAST
AND MAINMAST; ROYALS



SPENCER ON FOREMAST
AND MAINMAST; TRIANGULAR STAYSAILS
SET ON ALL STAYS

STUDDING SAILS ON FOREMAST AND MAINMAST;
SINGLE STUDDING SAIL ON MIZZEN TOPMAST;
RINGTAILS AND WATERSAILS AT END OF SPANKER;
WATERSAILS ON FORE AND MAINMASTS;
"JIMMY GREEN" UNDER JIB-BOOM



in the 1760s and sent her down to the West Indies with produce from Mount Vernon. The schooner's basic suit of sails—a jib and fore-and-aft foresail and mainsail, permitted her to sail efficiently into the wind, a thing the frigates and East India ships of Europe accomplished with difficulty. The easily-managed fore-and-aft sails also meant that relatively few crewmen were needed to work the ship. The world copied the American schooner throughout the 19th century and well into the 20th, and schooners on these shores and in Europe grew to big-ship size.

The American schooner was distinguished not only by its efficient rig but by the development of its hull form during the latter part of the 18th century into a vessel with a "sharp" bow and very narrow V-shaped sections. These small vessels were greyhounds compared with the merchant ships of their time, and their hull shape would be adapted and refined in the next century into the fastest sailing ships the world has known.

At the end of the 18th century, the fastest American schooners were "Virginia-built" vessels that developed in the tidewater ports of the Carolinas, Virginia and Maryland. The fastest of them all were built in Baltimore and became known as Baltimore clippers. During the War of 1812, these fast, nimble little vessels served as privateers—freelance warships which ran blockades and generally harrassed British naval and merchant ships which were unwieldy upwind and considerably slower. The clipper schooners were also much favored by smugglers and slavers.

The Gold Rush run launched hundreds of clippers and established Frisco as a world port for ships like *Kaiulani*, above, an 1899 Down-Easter.

In the packet trade, American shipbuilders took the clipper schooner's fast hull form and combined it with the full-rigged ship's many square sails. The packets were prototypes for the clipper ships, which became an indentifiable type by 1845 when *Rainbow,* considered to be the first true clipper, was launched in New York. If the packets had challenged the maritime nations of Europe, the Yankee clippers were to astonish them. Clipper-ship sailing records established in the 1850s still stand today, and clipper ships built by the renowned builder/designers Donald McKay of Boston and William Webb of New York were not only the fastest but undeniably the most beautiful ships ever launched.

When gold was discovered in Cali-

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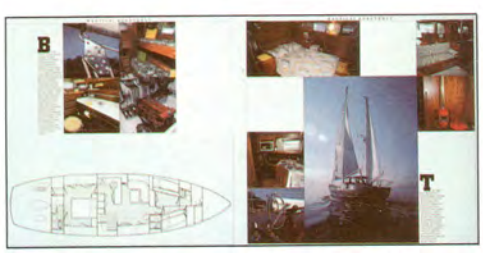

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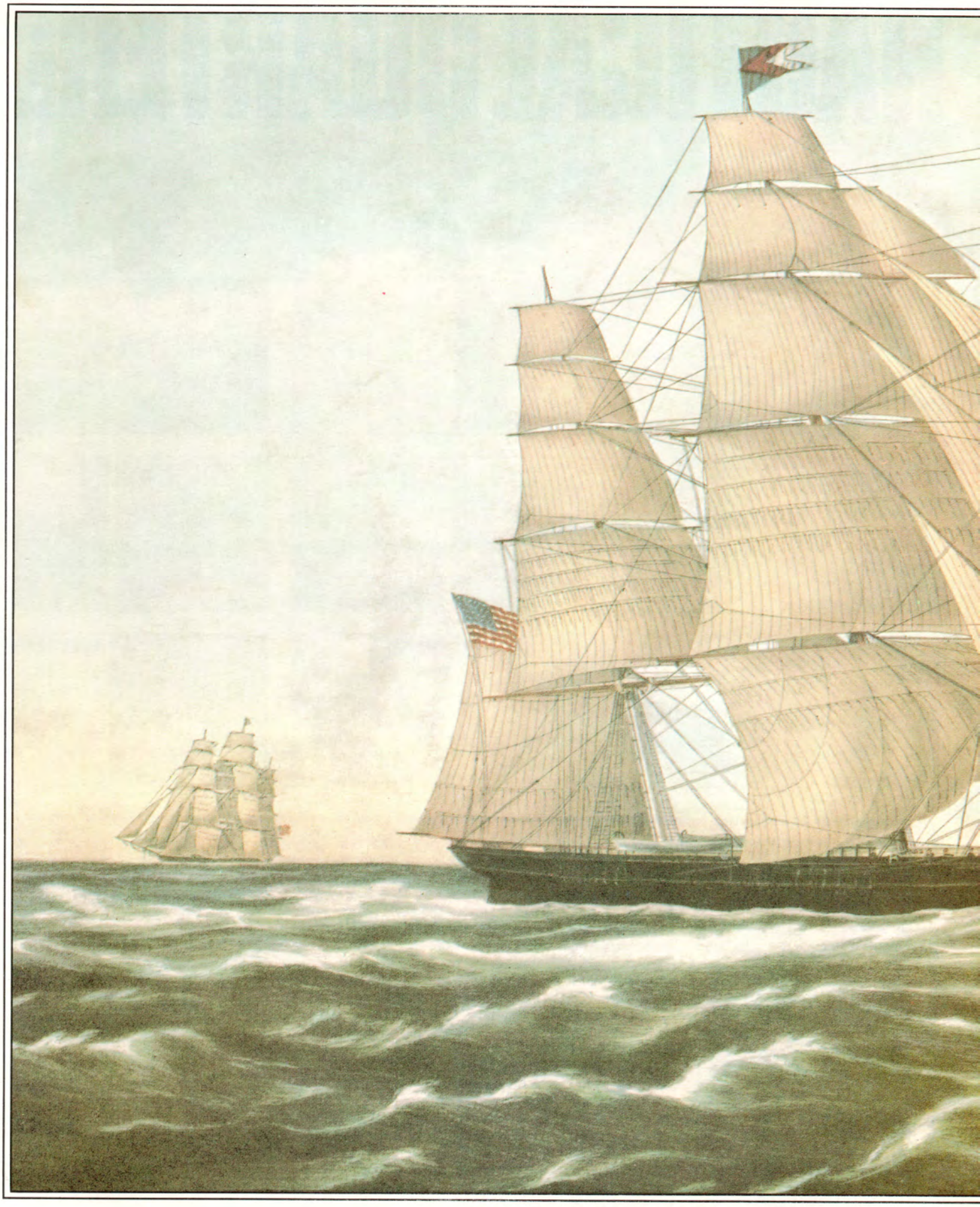
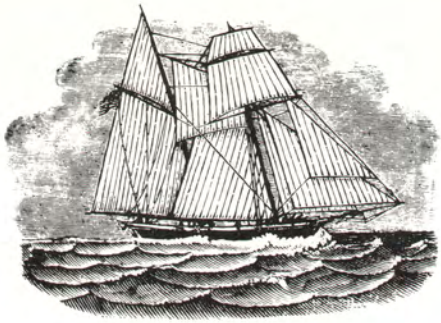


CLIPPER SHIP

"FLYING CLOUD."



The Baltimore Clipper, a typical example of which is shown here, was the topsail-schooner prototype for the fast, ship-rigged Yankee clippers.

fornia in 1848, the clipper-ship era began in earnest and the East Coast shipyards literally couldn't build fast vessels fast enough. Donald McKay's *Flying Cloud,* considered by many to be the most perfect of the American clippers, was sold to a second owner for twice her building cost even before she was launched. On her maiden voyage in 1851 she set a speed record from New York to San Francisco of 89 days, a time twice equaled but never beaten under sail. She was typical of her breed, and there were hundreds like her launched in a brief but glorious era of our maritime history.

The Yankee clippers dominated not only the Gold Rush runs but other trades as well. In 1850, the New York clipper *Oriental* amazed the sea-wise citizens of London by finishing first in the year's "tea race" from the East. The first American vessel to deliver tea from China to England following repeal of Britain's monopolistic Navigation Laws, her 97-day passage from Hong Kong to the Thames was a performance previously considered impossible. American-built clippers took over the world's light-cargo and passenger trades during the 1850s, running cotton from New Orleans to Liverpool, tea from Canton to London, immigrants from Bremen to New York, wool from Melbourne to Liverpool. By 1860, no less than two-thirds of the world's trade was carried in American-built ships which were largely under American ownership.

The halcyon days of the Yankee clipper ended abruptly with the Civil War, and the era of the British clipper abruptly began. British shipowners had begun buying American clippers in the early 1850s; a decade later they began to build their own. They copied the fine, deep, hollow-bowed lines of the American vessels, and they piled on acres of sail and raced their ships like yachts as the Yankees did. In the process, they produced even quicker ships for the long passages to Australia and the East. In 1868 the great British clipper *Thermopylae* left the Thames November 7 and arrived in Melbourne 62 days later. From Newcastle, New South Wales, she sailed to Shanghai in 28 days, then delivered a cargo of tea from Shanghai to London in 91 days. Each passage was a record. Two weeks later, the clipper *Sir Lancelot* beat her Shanghai-London time with a passage of 89 days. The British clippers were not only fast, they were nearly all as fast as one another. *Ariel, Taeping* and *Serica* left Foochow on the same morning in May of 1866 and didn't meet again until they entered the English Channel together. *Ariel* and *Taeping* docked within a half hour of one another, *Serica* a few hours later.

In the 1870s, British clippers began to be built of iron rather than hardwood and they began to sacrifice speed for cargo capacity to compete with steam. They were built longer and fuller in the bilges than the slim "extreme clippers," and they began a transition from the expensive clippers to the big, efficient steel sailing ships that were sail's last attempt to compete with the cheapness and reliability of steam. The British "tea

There were plenty of sailing ships left in the early years of this century, but the sail-vs-steam score could be read in tonnage figures recorded in the world's ports.

Above, the big Laeisz grain ship *Pommern*, now a museum vessel in Marieholm, Finland.

clippers" had regained the China tea trade by 1870, but the victory was England's and not sail's. By 1876, all the "first tea" was loaded on steamships.

Even in the middle of the last century, steamships were able to compete with sailing vesels on the world's shorter runs, and the handwriting was on the bulkhead in 1869 when the Suez Canal opened. The canal cut a month from the steam passage to the Far East, and the route through Suez offered no advantage to sailing ships which faced unreliable winds in the Mediterranean and the Red Sea. Within a decade of the Suez Canal's opening, steamships were carrying more of the world's sea cargo than sailing ships. It was the beginning of the end.

The end didn't come until 1957, when the big German grain ship *Passat* sailed from Buenos Aires to Lisbon with a cargo of barley. It took generations for sail to die commercially, and the last of the sailing ships were, in their way, the greatest of all. The final era of the sailing ship was to see both the defeat of once-magnificent clippers broken to duty as coal hulks for steamships and the glory of steel square-riggers built in this century that represent the highest development of sailing-ship technology and seamanship.

When Joseph Conrad passed a tough oral exam for his Master's papers in the 1880s, his Port of London examiner, a tough old sailing-ship captain, wished him luck and advised him to go into steam. Conrad ignored the advice, and he was one of thousands of sailing-ship men who fought a losing battle with steamships through two more generations. In the 1880s and 1890s, the "iron clippers" launched from Scotland's Clydeside sailed on to China and Australia, the Down Easters launched on the coast of Maine made new history on the old Gold Rush run from Atlantic ports around Cape Horn and up to California, and schooners sailed up and down the coasts, across the Great Lakes, and out to the offshore fishing banks.

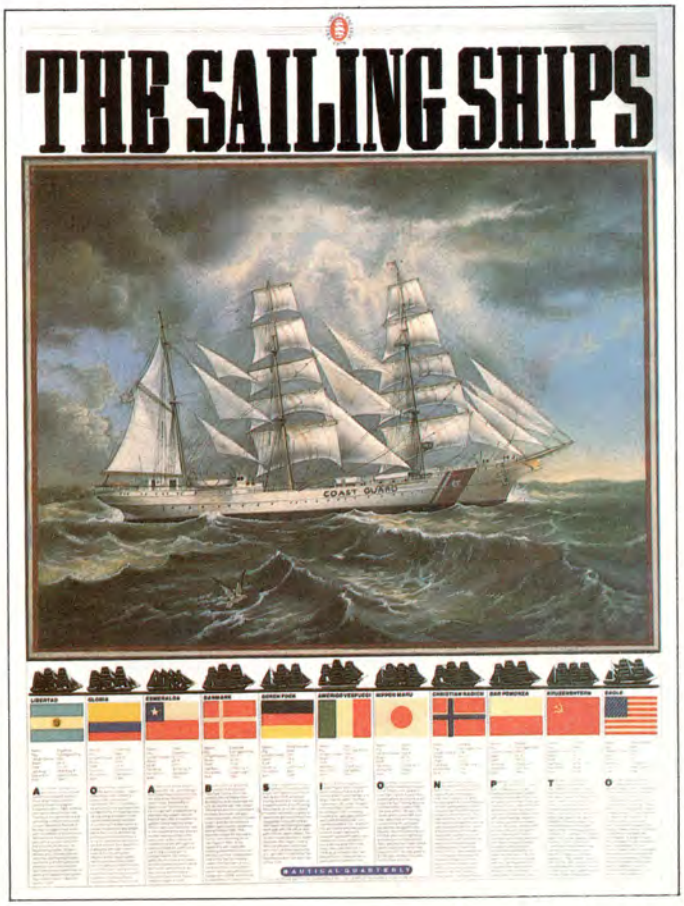
There were plenty of sailing ships left in the early years of this century, but the sail-vs-steam score could be read in tonnage figures recorded in the world's ports. England's sail tonnage in 1910 was less than a third of what it had been in 1880. In the last decades of sail, two

men—Ferdinand Laeisz of Germany and Gustaf Erikson of Finland—kept deepwater sailing ships in business. They even built new ships. With Germany preparing for war, Laeisz's big steel "windjammers"—boxy ships built for bulk cargo and rigged with wire rope managed by steam winches—ran Chilean nitrate around the Horn to Hamburg. It was a demanding trade in the violent Southern Ocean, but both the ships and the men were equal to the challenge of blasting through the gales of the Roaring Forties with all plain sail set.

After World War I, with sailing ships abandoned in every port in the world, the tough Laeisz windjammers—all of whose names began with "P"—came on the market as war reparations. Laeisz bought six of them back and Gustaf Erikson bought more. In 1920 Laeisz launched *Priwall* and in 1926 he had *Padua* built. These ships were the basis of the grain fleet that made the last passages of deepwater sail. "Grain races" as dramatic as the "tea races" of the 1860s were run until 1938 from Europe to Australia—and often as quickly, too. *Padua* and *Priwall* made a 66-day passage from Hamburg to Spencer Gulf, Australia, in the winter of 1933-34. *Cutty Sark* was 66 days on a similar passage in 1874-75. *Passat,* the last of the grain ships in service, put in to Lisbon in 1957 with a cargo of barley from Buenos Aires. In 1958 she became a stationary schoolship at Travemunde, Germany.

Passat was the last of the deepwater sailing ships to earn her livelihood, and it is appropriate that she survives as a schoolship. The schoolships are the last of the deepwater sailing ships in commission, and they represent a lively survival of thousands of years of tradition. They are steel vessels similar in rig and construction to the windjammers; they have the grace and polish of the clippers; and they bring their cadets the invaluable experience of challenging wind and sea with muscle and judgement as sailors have done for three thousand years and more. Steam has seized the body of the world's merchant fleet, but sail still holds the spirit.

Michael Levitt, an often-published yachting writer with a special interest in ocean racing, is Managing Editor of *Nautical Quarterly.*



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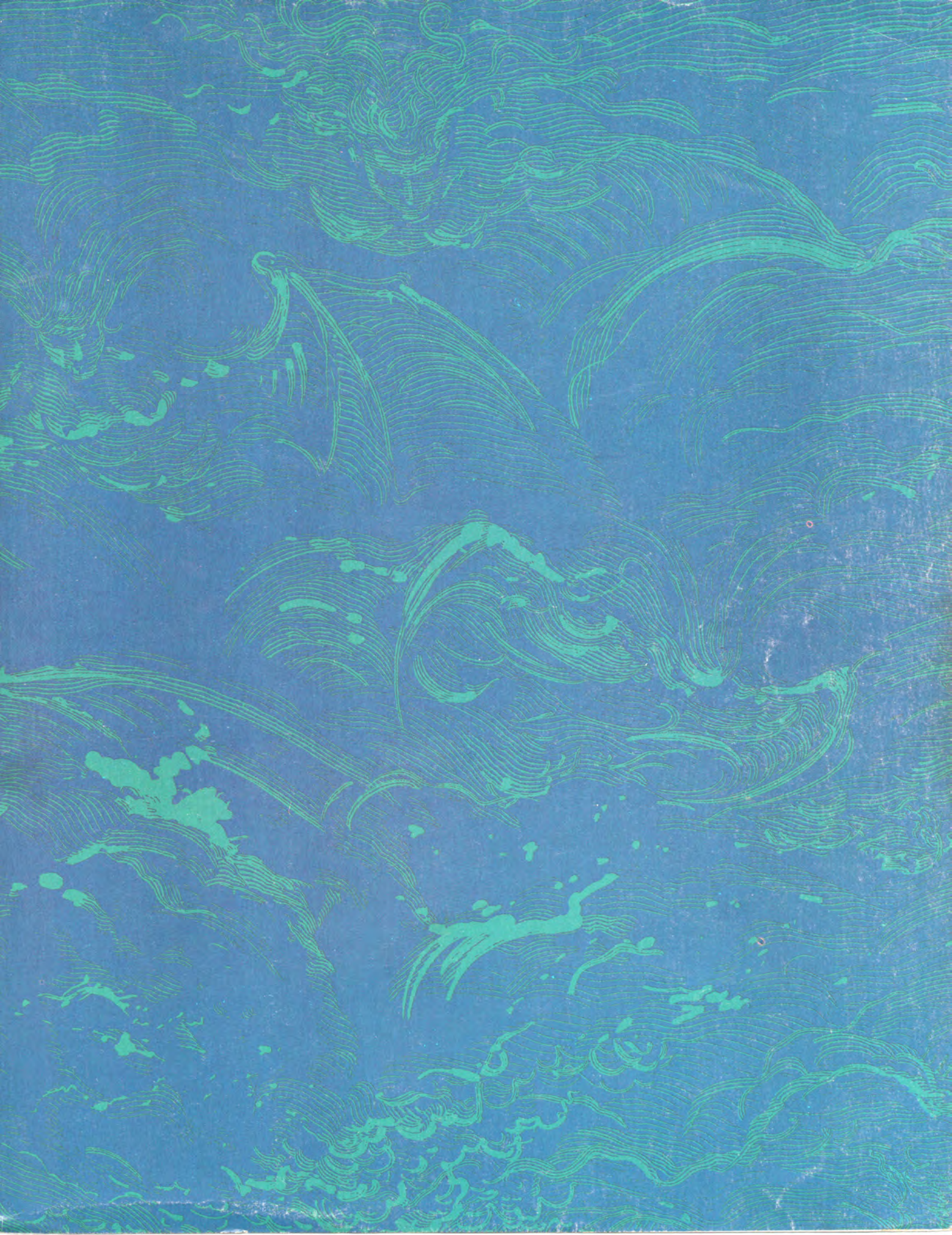

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